

APR 22 1909

# THE IRON AGE

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MADE IN AMERICA and  
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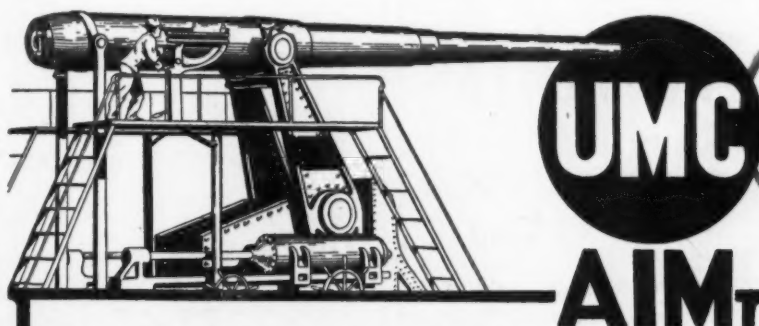
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Special Electrical  
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Highest electrical efficiency  
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See our ad on page 16



Our advertising aim is to create a demand—to make it only necessary for the dealer to stock up. We recently spoke of the big gun aimed at 10,000,000 country newspaper readers. We now refer to the gun we fire at 1,710,504 readers of sportsmen's publications—every man a hunter. Get your share of the demand which we create. Stock up with U.M.C. shells and cartridges.

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**WATER TUBE BOILERS** The Babcock & Wilcox Co.,  
85 Liberty Street,  
New York  
See page 50

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No matter how severe the conditions "Capewell"  
nails can always be relied upon to HOLD THE  
SHOE and SAVE unnecessary EXPENSE.

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be made for clean scrap cuttings returned to our factory.

The genuine bears our Trade Mark.

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THE AMERICAN TUBE & STAMPING COMPANY  
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SEE  
PAGE 24



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The Standard Babbitt of the World

We manufacture  
everything in the  
Babbitt Line.

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BRILLIANT FINISH  
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Phosphor and Deoxidized  
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Special Brass Goods to Order

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Complete Physical Testing Laboratory.  
Expert Testimony in Court and Patent Cases.

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Selected Plates for Etchers' and Lithographers' use.  
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BRASS, BRONZE, COPPER in all forms

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## HENDRICKS BROTHERS

Manufacturers of

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and Staybolts, Wire and Braziers Rivets

Importers and Dealers in:

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49 CLIFF STREET

NEW YORK





# THE IRON AGE

New York, Thursday, April 22, 1909.

## Rolled Manganese Steel Rails.

### The Manard Rail of the Pennsylvania Steel Company.

For a number of years the Pennsylvania Steel Company has been developing what is known as its Manard steel product, a manganese steel which has been extensively used for crusher jaws, coal breaker rolls and

a curve having a center radius of 82 ft., the total wear being 0.065 ft. A cast manganese steel rail on the same curve after 2291 days showed wear of but 0.046 ft. It was then taken up on account of an accident, but was later relaid so that it might be completely worn down.

The Pennsylvania Steel Company has been working on the problem of rolling manganese steel rails, in view of the expensiveness of the cast manganese rail. Patterns were expensive and the expense of finishing was high, grinding being the only method by which the rail

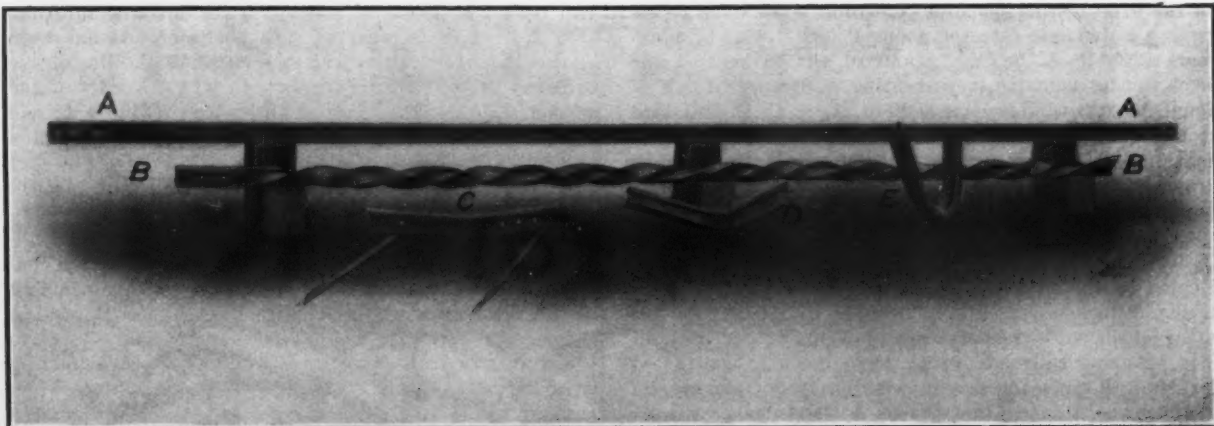


Fig. 1.—Manard Rails. Toughness and Ductility as Indicated by Twisting and Bending Tests.

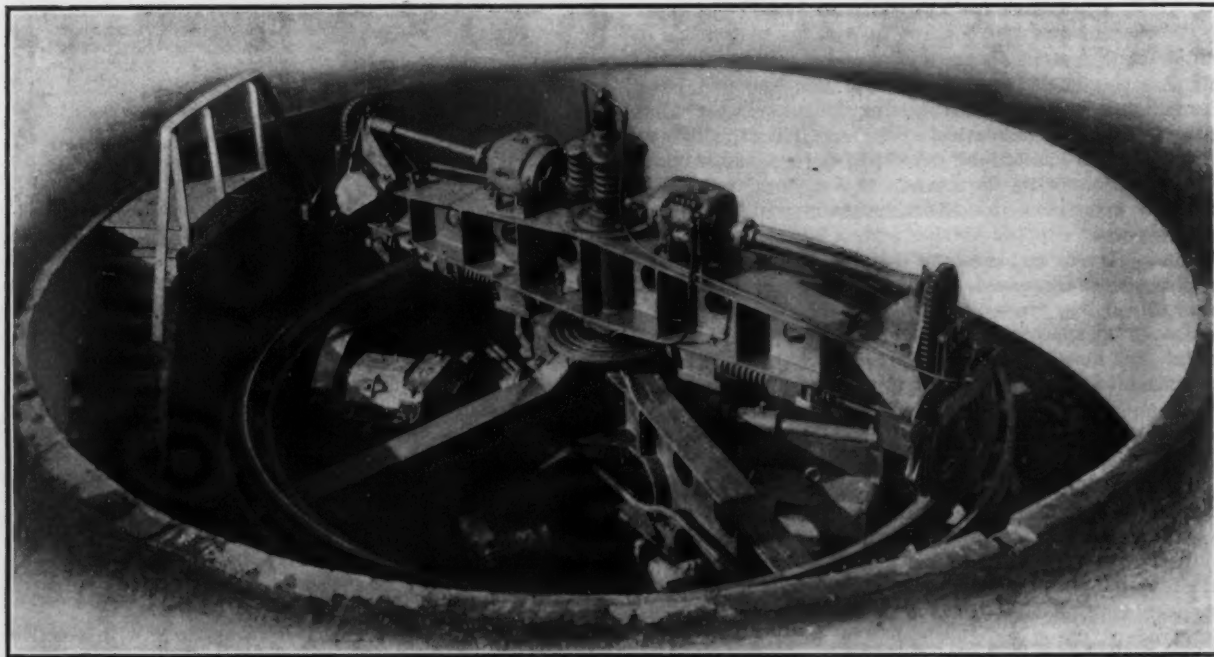


Fig. 2.—Rail Wear Testing Machine of the Pennsylvania Steel Company, Steelton, Pa.

parts of dredges and excavators, and particularly for crossings, frogs and switches for steam and street railroads. Until the past year all the above products as manufactured at Steelton have been castings, and while these have given good results in positions calling for a maximum of resistance to wear, the company constantly experimented with a view to producing rolled material with its greater reliability. The superiority of the manganese steel rail in severe service and its life as compared with the Bessemer rail have been established by a number of users. The Boston Elevated Railway Company made tests of the wear of manganese rails and Bessemer rails, from which the life of the former was put at more than 50 times that of the latter. A test showed 44 days to be the life of a Bessemer rail on

could be finished to form. The greater difficulty of securing a homogeneous and solid structure in the cast rail was another point. There were also more joints in laying cast manganese rails, as they were laid in lengths not exceeding 20 ft. The bringing out of the rolled Manard rail was in line with the development by the Pennsylvania Steel Company of a rail scheme which would mean uniform rail wear. The manganese steel rail would be furnished for the sharper curves; the nickel chrome rail, which will be rolled when the company is able to utilize its Mayari District iron ores from Cuba, will serve for curves of large radius, while the carbon rail, according to the usual specification, will be furnished for tangents. The underlying idea is that by a proper study of the demands of a given line, its track

can be laid so that the life of the different portions shall be approximately the same.

The difficulties attending the rolling of manganese steel on a commercial scale were not small, the metal being extraordinarily hard at the proper rolling temperature. Special rolls were designed and new rolling methods were employed, and unusual provision required to be made for tempering pieces of rail weight and length. The attainment of uniformity in chemical composition was also a matter of time and experiment. The rails shown in Fig. 1 illustrate the properties which the Manard rail possesses in a marked degree—toughness, ductility and resistance to shock. A represents a 100-lb. 33-ft. rail of the 1909 Pennsylvania Railroad standard section. At B is an 85-lb. A. S. C. E. standard section rail, twisted cold until six twists remain as a permanent set in a length of 26 ft. The rail C is a 100-lb. A. S. C. E. standard section with 1 1/16 in. holes in the web, bent on the drop testing machine, the total work done representing a dynamic force of about 45,000 ft. lb. D represents a 100-lb. A. S. C. E. standard section bent on the drop testing machine, representing a dynamic force of about 150,000 ft. lb. E is a 90-lb. A. S. C. E. standard section bent partly on the drop testing machine and later bent into a U shape under the hammer. Under such drop tests as the rail C was subjected to without showing a sign of fracture, exceptionally strong Bessemer and open hearth rails broke with a force of less than 6000 ft. lb. The ductility of the manganese steel rails is indicated by the fact that test bars forged from the head giving a tensile strength of 150,000 to 159,000 lb. per square inch showed elongation of 50 to 60 per cent. in 8 in. Among railroads which have recently contracted for Manard rails for use in positions requiring special wearing qualities are the Hudson & Manhattan Railroad Company, the Philadelphia Rapid Transit Company and the Brooklyn Elevated Railway Company.

#### A Machine for Testing Rail Wear.

In the absence of comparative data as to the life of rolled manganese rails and of standard Bessemer and high carbon open hearth rails, the Pennsylvania Steel Company designed a rail testing machine which has given valuable facts bearing on the question of rail wear. Its usefulness has indeed developed beyond the original contemplation of its designers. It has been found possible to determine the effect on rails and wheels of brakes and of slipping driving wheels under various conditions; also to measure the relative coefficients of adhesion for different varieties of rails, to note the effectiveness of various types of rail joints and to observe the effect of flat spotted car wheels on different varieties of rails. The machine is shown in Fig. 2 as installed in the pit provided for it at the Steelton works of the Pennsylvania Steel Company. On two occasions it has been removed to be set up at exhibitions of railroad appliances—in one case at Atlantic City and more recently at the Chicago convention of the American Railway Engineering and Maintenance of Way Association. As will be seen, a circular support is provided for the rails, which are curved to a diameter of 20 ft. The circumference is made up of three or more rails, all having different chemical and physical characteristics. Two 33-in. M. C. B. standard tread car wheels, having independent axles, are mounted in bearings on the revolving arm and carry the dead load of the arm and center steady pin. To reproduce the conditions and effects of driving wheels on a track, power is supplied directly to the wheels from the two motors mounted on the revolving arm. When it is desired to reproduce the conditions of ordinary wheels, power is supplied to the revolving arm by motors at the base of the machine. These turn the arm through gearing attached to the center pin. The wheels are provided with air brakes. The rails are connected by standard fishing and are fastened by spikes to short wooden ties, the ties being secured to a heavy circular cast iron frame tied by four radial arms to the center bearing. The rails may be fastened directly to the iron frame if desired, the frame being so designed even in this case that a slight wave motion in the rail is perceptible. It is possible to secure a pressure of wheels against the rails to any desired degree within the limits of ordinary railroad

practice. The maximum speed contemplated is 85 rev. per min., equivalent to a train speed for the car wheels of 60.94 miles per hour. The vertical pressure exerted by each car wheel on the rail due to the dead load is 11,500 lb. By adjustment of the spring mounted above the revolving arm this can be increased up to 30,000 lb., giving a maximum vertical pressure of 41,500 lb. Friction is largely eliminated by a ball thrust bearing between the revolving arm and the springs.

The end play allowed the axles gives a lateral pressure on the head of the rail due to the centrifugal force of the wheel and axle. This varies from 450 lb. at 10 rev. per min. of the beam, giving a train speed of wheel of 7.17 miles per hour, to 32,800 lb. at 85 rev., with train speed of 60.94 miles per hour. At 55 rev. per min. and a train speed of wheels of 39.43 miles per hour, the centrifugal thrust of the wheel is 13,700 lb.

As the Manard rail will be used on sharp curves the rail testing machine at Steelton gives just the information desired as to wear in such positions. It has been shown that the Manard rail has 50 times the life of the ordinary Bessemer rail on curves. The economy of the former is evident in view of the price of \$125 a ton as against \$28 a ton for Bessemer rails. The Manard rails are rolled in lengths of from 24 to 33 ft.

A comparison is made of the performance of the rail testing machine with the wear to which rails are subjected on the Horseshoe Curve of the Pennsylvania Railroad, one of the points of greatest main line traffic congestion in the country. An average of 2600 cars a day is the record for each freight track on the Horseshoe Curve. Each rail in the track, therefore, is subject to the wear from 10,400 wheels a day. A corresponding wear is given the rail on the Steelton machine, when running at 30 rev. per min., in less than 3 hr., and a week's wear is shown in less than a day. With the arm of the machine making 30 rev. per min. the wheels are traveling at a train speed of 21 1/2 miles per hour, which is above the average speed of a freight train on the Horseshoe Curve.

#### The Central Tube Company.

A Pennsylvania charter has recently been granted to the Central Tube Company, capitalized at \$350,000, with principal offices in the Lewis Building, Pittsburgh, Pa. This company has been organized by interests identified with the Pittsburgh Steel Construction Company, and it has purchased from the latter its grounds and buildings at Economy, Pa., containing about 14 acres of ground completely equipped with mill buildings, power plant, railroad tracks, &c. It is the intention of the purchasers to install in these buildings as soon as possible a butt weld pipe mill for making black and galvanized merchant pipe from 1/4 to 3 in. in diameter.

The pipe mill, threading floor and socket department will be located in the buildings formerly used as laying out and assembling shops, this group being 120 x 460 ft. Connected to these structures at one end is a building, 75 x 200 ft., which was formerly the riveting shop, but which will be used as a warehouse. It has two railroad tracks, providing excellent shipping facilities.

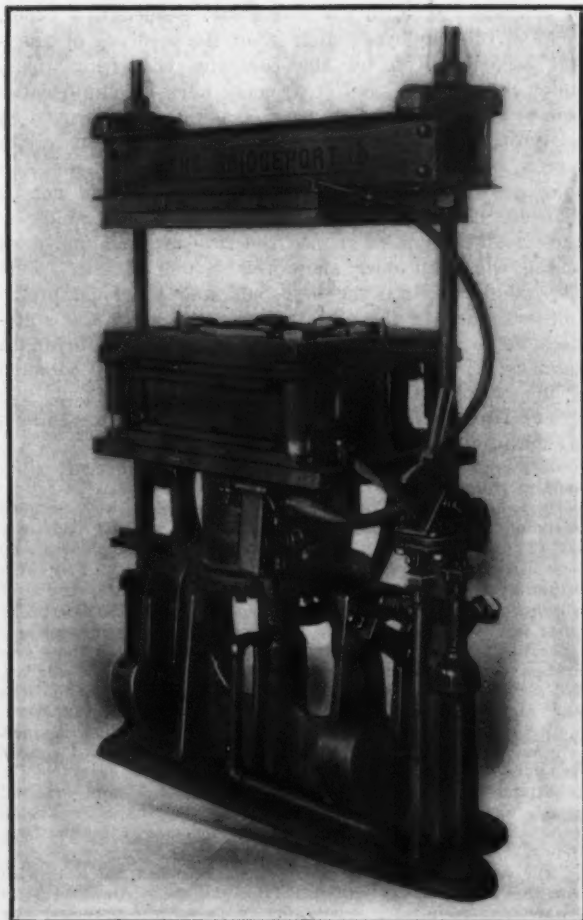
The buildings are equipped throughout with electric traveling cranes, are well lighted, and are in every respect adapted to the requirements of a strictly modern pipe mill. The structural machinery which formerly occupied the buildings has all been sold and removed, and installation of the new pipe machinery is now going on with the expectation that the plant will be ready for operation about July 1. Ample ground being available, provision has been made for adding more butt weld mills, lap weld mills, an enameling plant, &c. Alex Laughlin is president; C. W. Coffman, vice-president, and G. C. Pease, secretary and treasurer.

Muirkirk Furnace, of which Charles E. Coffin is proprietor, will be blown in about June 1. This furnace is located at Muirkirk, Md., and is operated with charcoal fuel, turning out an exceptionally high grade of pig iron adapted to the manufacture of castings requiring great strength.

### The Bridgeport Molding Machine.

The power ramming and power lifting molding machine illustrated is built by the Bridgeport Foundry & Machine Company, Bridgeport, Conn. It is operated throughout by compressed air, in the lifting and vibrating of the flask, which are accomplished by one operation, and in the ramming. The machine shown is one of a lot recently shipped to Japan, and is equipped with a special arrangement detachable from the table and designed for use with either rapping plates or stool plates. The molding is done precisely the same with this device as with the standard flask.

The knee plate seen at the front of the large air cylinder controls the vibrator and the raising cylinders. The pressure of the knee against the plate opens the



The Power Ramming and Power Lifting Machine Built by the Bridgeport Foundry & Machine Company, Bridgeport, Conn.

valve admitting air to the vibrator, while a continued pressure on the same plate opens the valve which admits air to the raising cylinders, lifting the flask from the pattern; vibration continues throughout the lifting. The upper part of the machine constitutes the backing against which the mold is compressed. The side rods supporting this member are pivoted at the bottom and the whole counterbalanced to allow it to be swung back to permit placing the flask in the machine. The operator then shovels the sand into the flask, draws back the backing board and the flask is rammed by moving the lever seen just at the right of the table, which causes the table to raise against the straining bar. The table recedes when the lever is returned to its original position. The operator then presses the knee plate, the flask is vibrated and lifted and is then ready to be laid upon the floor. The machine may be used either with snap flasks or with iron flasks.

The machine as illustrated shows a set of 1-in. union nuts mounted with the stool plate, thus doing away with all cores and saving metal where threading is required, as with this method the inside of the nut is perfectly straight. Patterns of this nature are made without fins, no draft being required. With this machine it is stated

that 200 molds a day are easily made, and with important saving in weight.

### The White Star Oiling System at Gary.

The Pittsburgh Gage & Supply Company, Pittsburgh, has completed the installation at the plant of the Indiana Steel Company at Gary, Ind., of a complete White Star oiling system. It is built in two sections, each of which is equipped with a complete White Star filtering unit. The larger, placed in the electric power plant, has a storage capacity of 1200 gal. pure oil, 400 gal. dirty oil and 200 gal. of water, and has a total filtering capacity of 120,000 gal. per day. The smaller, located in the blowing engine room, has a storage capacity of 1000 gal. pure oil, 400 gal. dirty oil and 200 gal. of water, and has a total filtering capacity of 72,000 gal. per day. Each filtering unit consists of three heavy galvanized iron tanks of the strongest possible construction.

The oil is pumped from the auxiliary settling tanks to the central storage tank or separator, where it is heated to about 130 degrees F., and separated immediately from the water by gravity, the water being automatically discharged to drains. The oil leaving this separator is conveyed through 3-in. headers from each side of the separator to the two filtering compartments, in which are located 24 huge galvanized screen filtering cylinders, which are covered with specially prepared filtering cloth. Each of these compartments forms one large tank, and not a series of small units placed together; neither is the oil hurried through rapid stages of filtration, but it is slowly and equally distributed to each cylinder, thereby avoiding the fermented condition so fatal to complete oil recovery. The removal for individual cleaning of these cylinders is provided for by a specially designed double swing valve, so arranged that one or more cylinders can be removed without interfering with the continuous operation of the filter or the oiling system.

It has been proved from experiments conducted by the lubricating engineers of the Pittsburgh Gage & Supply Company and by other experts that, to reclaim oil successfully, passive movement and rest are equaled only by effective and easily renewed means of filtration. This fact is clearly evidenced in the Gary plant, where the capacity of the settling tanks for returned oil is enormous, and, combined with clean oil storage tanks, causes each complete cycle of oil in the system to cover an extended period of time. The details of the oiling system installed by the Indiana Steel Company were given the closest attention by the engineers employed by that company, and it is claimed that a more complete or satisfactory system could not have been secured. This is said to be the largest oiling system installation of its kind in the world. The Pittsburgh Gage & Supply Company has installed similar apparatus for the Carnegie Steel Company, National Tube Company, Lackawanna Steel Company, Pittsburgh Steel Company and other large interests, in whose manufacturing operations heavy duty and complete oiling filtration are the important factors.

**The School for Molders at the Technical Institute, Indianapolis.**—The Committee of the National Founders' Association that supervises the school for iron molders at the Technical Institute, Indianapolis, Ind., met at the institute, April 5, in consultation with E. A. Johnson, director of the school. The members of the committee were all present, as follows: John L. Ketcham, Indianapolis, chairman; O. P. Briggs, Minneapolis; William Gilbert, Cincinnati, Ohio; Irving H. Reynolds, Youngstown, Ohio, and H. A. Carpenter, Providence, R. I. Twenty-one young men are learning the trade of iron molding at the school at present, the course covering two years. They are paid 8 cents an hour at the beginning, and 1 cent an hour additional every three months. In this way they earn about enough to pay their expenses. The school graduated six molders last year. The National Founders' Association has contributed \$3000 to the school, which is lent in the form of \$100 scholarships to the students. A young man without means can borrow from this fund and learn the trade.

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#### The Central Tube Company.

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The pipe mill, threading floor and socket department will be located in the buildings formerly used as laying out and assembling shops, this group being 120 x 460 ft. Connected to these structures at one end is a building, 75 x 200 ft., which was formerly the riveting shop, but which will be used as a warehouse. It has two railroad tracks, providing excellent shipping facilities.

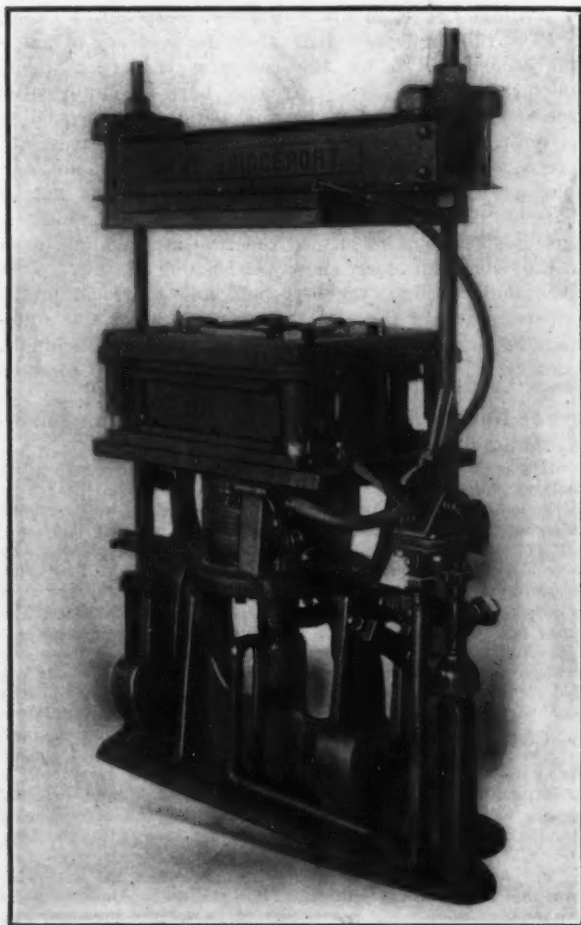
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Muirkirk Furnace, of which Charles E. Coffin is proprietor, will be blown in about June 1. This furnace is located at Muirkirk, Md., and is operated with charcoal fuel, turning out an exceptionally high grade of pig iron adapted to the manufacture of castings requiring great strength.

### The Bridgeport Molding Machine.

The power ramming and power lifting molding machine illustrated is built by the Bridgeport Foundry & Machine Company, Bridgeport, Conn. It is operated throughout by compressed air, in the lifting and vibrating of the flask, which are accomplished by one operation, and in the ramming. The machine shown is one of a lot recently shipped to Japan, and is equipped with a special arrangement detachable from the table and designed for use with either rapping plates or stool plates. The molding is done precisely the same with this device as with the standard flask.

The knee plate seen at the front of the large air cylinder controls the vibrator and the raising cylinders. The pressure of the knee against the plate opens the



The Power Ramming and Power Lifting Machine Built by the Bridgeport Foundry & Machine Company, Bridgeport, Conn.

valve admitting air to the vibrator, while a continued pressure on the same plate opens the valve which admits air to the raising cylinders, lifting the flask from the pattern; vibration continues throughout the lifting. The upper part of the machine constitutes the backing against which the mold is compressed. The side rods supporting this member are pivoted at the bottom and the whole counterbalanced to allow it to be swung back to permit placing the flask in the machine. The operator then shovels the sand into the flask, draws back the backing board and the flask is rammed by moving the lever seen just at the right of the table, which causes the table to raise against the straining bar. The table recedes when the lever is returned to its original position. The operator then presses the knee plate, the flask is vibrated and lifted and is then ready to be laid upon the floor. The machine may be used either with snap flasks or with iron flasks.

The machine as illustrated shows a set of 1-in. union nuts mounted with the stool plate, thus doing away with all cores and saving metal where threading is required, as with this method the inside of the nut is perfectly straight. Patterns of this nature are made without fins, no draft being required. With this machine it is stated

that 200 molds a day are easily made, and with important saving in weight.

### The White Star Oiling System at Gary.

The Pittsburgh Gage & Supply Company, Pittsburgh, has completed the installation at the plant of the Indiana Steel Company at Gary, Ind., of a complete White Star oiling system. It is built in two sections, each of which is equipped with a complete White Star filtering unit. The larger, placed in the electric power plant, has a storage capacity of 1200 gal. pure oil, 400 gal. dirty oil and 200 gal. of water, and has a total filtering capacity of 120,000 gal. per day. The smaller, located in the blowing engine room, has a storage capacity of 1000 gal. pure oil, 400 gal. dirty oil and 200 gal. of water, and has a total filtering capacity of 72,000 gal. per day. Each filtering unit consists of three heavy galvanized iron tanks of the strongest possible construction.

The oil is pumped from the auxiliary settling tanks to the central storage tank or separator, where it is heated to about 130 degrees F., and separated immediately from the water by gravity, the water being automatically discharged to drains. The oil leaving this separator is conveyed through 3-in. headers from each side of the separator to the two filtering compartments, in which are located 24 huge galvanized screen filtering cylinders, which are covered with specially prepared filtering cloth. Each of these compartments forms one large tank, and not a series of small units placed together; neither is the oil hurried through rapid stages of filtration, but it is slowly and equally distributed to each cylinder, thereby avoiding the fermented condition so fatal to complete oil recovery. The removal for individual cleaning of these cylinders is provided for by a specially designed double swing valve, so arranged that one or more cylinders can be removed without interfering with the continuous operation of the filter or the oiling system.

It has been proved from experiments conducted by the lubricating engineers of the Pittsburgh Gage & Supply Company and by other experts that, to reclaim oil successfully, passive movement and rest are equaled only by effective and easily renewed means of filtration. This fact is clearly evidenced in the Gary plant, where the capacity of the settling tanks for returned oil is enormous, and, combined with clean oil storage tanks, causes each complete cycle of oil in the system to cover an extended period of time. The details of the oiling system installed by the Indiana Steel Company were given the closest attention by the engineers employed by that company, and it is claimed that a more complete or satisfactory system could not have been secured. This is said to be the largest oiling system installation of its kind in the world. The Pittsburgh Gage & Supply Company has installed similar apparatus for the Carnegie Steel Company, National Tube Company, Lackawanna Steel Company, Pittsburgh Steel Company and other large interests, in whose manufacturing operations heavy duty and complete oiling filtration are the important factors.

**The School for Molders at the Technical Institute, Indianapolis.**—The Committee of the National Founders' Association that supervises the school for iron molders at the Technical Institute, Indianapolis, Ind., met at the institute, April 5, in consultation with E. A. Johnson, director of the school. The members of the committee were all present, as follows: John L. Ketcham, Indianapolis, chairman; O. P. Briggs, Minneapolis; William Gilbert, Cincinnati, Ohio; Irving H. Reynolds, Youngstown, Ohio, and H. A. Carpenter, Providence, R. I. Twenty-one young men are learning the trade of iron molding at the school at present, the course covering two years. They are paid 8 cents an hour at the beginning, and 1 cent an hour additional every three months. In this way they earn about enough to pay their expenses. The school graduated six molders last year. The National Founders' Association has contributed \$3000 to the school, which is lent in the form of \$100 scholarships to the students. A young man without means can borrow from this fund and learn the trade.

## The National Metal Trades Association.

### The Eleventh Annual Convention at the Hotel Astor, New York, on April 14 and 15.

The eleventh annual convention of the National Metal Trades Association, held on Wednesday and Thursday, April 14 and 15, at the Hotel Astor, New York, proved to be one of the most interesting meetings ever held by the organization. The papers and discussions were decidedly different from the usual papers presented at the conventions of this organization, inasmuch as the members discussed largely constructive methods rather than methods of business defense, and for the first time a labor leader was given a hearing at a Metal Trades Association convention.

#### Wednesday Afternoon Session.

A report of the opening session, on Wednesday morning, was given in *The Iron Age* of last week. The session of Wednesday afternoon was largely consumed in the presentation of reports of the standing committees on the association. In that connection M. H. Barker, American Tool & Machine Company, Boston, Mass., reporting for the joint committee of the National Metal Trades Association and the National Founders' Association, reviewed the history of the joint committee, which was created in 1905, and stated that the committee had done good work for the organization in watching legislative methods and reporting on proposed measures unfair to manufacturers, and went on to explain the success which had been accomplished by the merging of the publications of the two associations. He recommended for the committee that a mutual president be elected by the two associations, and acting on his recommendation the committee was continued with instructions to take the matter up with the National Founders' Association.

The question of appropriating a sum of money for the Winona Technical Institute, which was defeated last year, came up for considerable discussion. A resolution that the association should donate \$2000 annually for four years was at first opposed on the ground that other technical institutions would come forward with similar requests. After it was pointed out that the Indianapolis branch of the association had agreed to assist the institute by donating \$1000 annually for four years, providing the National Association would take similar action, the resolution was passed.

Just before the close of the Wednesday afternoon session E. P. Bullard, Jr., Bullard Machine Tool Company, Bridgeport, Conn., presented a paper on the importance of the apprentice system, which, with some of the other papers read at the convention, will be found elsewhere in this issue.

#### The Banquet.

On Wednesday night the convention banquet took place. F. K. Copeland, Sullivan Machinery Company, Chicago, Ill., president of the association, acted as toastmaster. Addresses were made by Seth Low, president of the National Civic Federation, who discussed the tariff problem and outlined the work of the federation; Rev. S. Parkes Cadman, pastor of the Central Congregational Church, Brooklyn, and B. D. Trattel, of the New York Building Trades Employers' Association. The programme was interspersed with music by an excellent quartette. William Lodge, Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, was, according to a time-honored custom, introduced to lead the banqueters in singing "The Smoke Goes Up the Chimney Just the Same."

#### Thursday Morning Session.

Both the morning and afternoon sessions of Thursday were largely given over to papers and discussions treating particularly of various phases of the labor situation.

In the morning Paul Blatchford, secretary of the Chicago branch of the association, read two papers on "Profit Sharing," one by R. T. Crane, Crane Company, Chicago, and the other by N. O. Nelson, N. O. Nelson Mfg. Company, St. Louis, Mo. In the ensuing discussion E. P. Robinson, Atlantic Works, East Boston, Mass., explained a profit-sharing plan in operation in a plant in

his vicinity since 1901, under which a certain percentage of the profits each year was put aside and after another year was distributed among the workmen in proportion to their wages. The percentage of the wages has varied, Mr. Robinson explained, from 10 to 18.

Work for the betterment of industrial conditions in Europe was explained by Dr. William H. Tolman, director of the Museum of Safety and Sanitation, New York, who exhibited quite a number of views of safety devices used in connection with machinery.

An interesting address was that of F. C. Blanchard, works manager of the Ashcroft Mfg. Company, Bridgeport, Conn., who explained the features of a premium system of paying for labor. His remarks were illustrated with lantern slides. The paper will be presented in a future issue of *The Iron Age*, as well as a paper on "Wage Systems," by Robert Goldmann, Schenectady, N. Y.

William Lodge, in discussing Mr. Blanchard's paper, spoke of the employees' distrust of the accuracy of financial reports given by the company employing them, which, he said, makes it extremely hard to obtain satisfactory results from a profit-sharing plan depending solely on dividends. Mr. Lodge believes in the premium system, but it must, he insisted, be based on a dependable cost system and the prices once set should not be changed. He held that the manufacturer must abide by his agreement not to reduce the rate of premium, even if the workman does show remarkable results. This plan would produce the best paid and the most profitable workmen in the world. After repeating the statement he made at the Business Men's Club, Cincinnati, January 27, at a dinner given by him to the 40 foremen of his company, and which was published on page 470 of *The Iron Age* of February 11, he presented the following addition to the plan then set forth:

It was the original intention to pay to the foremen 5 cents per hour for the hours saved, but as this gave them the benefit of the hours earned before this was put into effect, we concluded to change that figure from 5 cents to 4 cents, and set aside one-half of this for a pension fund to take care of all employees who have been in the service of the company 25 years, if they wish to retire, at one-half their wages. The amount for the first month to be set aside for this purpose reached \$55.50. The other half is to be given to the superintendent and assistant superintendent, and the amount to be divided between these two officials the first month, in addition to their regular salaries, will be \$55.50. We expect, however, that both these amounts will reach much larger sums before the year is over, and everything seems to be moving along in a very satisfactory manner.

Since the installation of this system we have added considerably to our inspection department, so that now every component part of a machine is tested with internal and external gauges as well as dimension gauges for lengths before being mounted. A similar rigid inspection is then made after the complete machine is finished.

The paper as given, as you will notice, does not deal with how the premium was established for the men. On this point we may say that prior to the installation of the premium system we had always kept careful account of the cost of the different items of all sizes of machines, and in installing this system we referred back to these costs, taking an average for three years. This treats the men liberally, because the cleaning and oiling of the machines, and the finding and replacing of the various clamps and special appliances used in doing the work, were included in the time charged, and the men were given 50 per cent. of the time saved at their regular hourly rate, and we have carefully avoided making reductions unless entirely different methods of doing the work were established.

#### Thursday Afternoon Session.

On Thursday afternoon James Wilson, president of the Pattern Makers' League of North America, spoke on "What the Workman Wants from the Employer," and was thanked for his paper, but it was not discussed. Epaphroditus Peck, lecturer on the law of master and servant of the Law Department of Yale University, spoke on "Employers' Liability for Accidents," and David Gibson, editor of *Common Sense*, Cleveland, Ohio, discussed the labor question.

The subject of drafting an apprenticeship agreement to suit the conditions of to-day was brought up by Mr. Lodge. H. N. Covell, Lidgerwood Mfg. Company, New York, supplemented the suggestion with one that the committee should report on the whole apprentice system. George F. Steedman, Curtis & Co. Mfg. Company, St. Louis, Mo., questioned as to whether the pay which apprentices now get holds the boys. Mr. Covell said that his company is obliged to pay apprentices more in Brook-

lyn than is demanded in some cities, and he explained that his company holds most of the boys to their contract by deducting a small percentage of their salaries each week and supplementing this back pay with a premium at the end of the year. It also agrees to re-employ the boys who had served their time if they worked elsewhere one year. Another member spoke of the difficulty of getting applications from apprentices which, he said, is largely due to the fact that the boys can get higher wages in positions where they can accomplish as much as a man by performing unskilled labor, and most of the boys desire to go in for quick money.

The Committee on Resolutions through F. C. Caldwell, H. W. Caldwell & Son Company, Chicago, Ill., offered a resolution that the Joint Executive Committee of the association and the National Founders' Association should meet with the Administrative Council to effect a plan for having a joint salaried executive. It was suggested that the proposition should be submitted to the members, to be decided by letter ballot. This motion was passed.

Resolution on the deaths of Edwin Reynolds, Milwaukee, and William H. Pfahler, Philadelphia, were adopted by the association, the memorials being read by H. W. Hoyt and J. H. Schwacke.

#### ELECTION OF OFFICERS.

Mr. Barker presented the report of the Nominating Committee, which was unanimously approved by the convention, and the following officers were declared elected:

President, Howard P. Eells, Bucyrus Company, South Milwaukee, Wis.; first vice-president, J. H. Schwacke, Wm. Sellers & Co., Inc., Philadelphia, Pa.; second vice-president, H. W. Hoyt, Great Lakes Engineering Works, Detroit, Mich.; treasurer, William Lodge, Lodge & Shipley Machine Tool Company, Cincinnati, Ohio. Councillors for two years, R. D. Reed, H. B. Smith Company, Westfield, Mass.; Henry Sharpe, Brown & Sharpe Mfg. Company, Providence, R. I.; Edgar McDougal, Allis-Chalmers-Bullock, Ltd., Montreal, Quebec; F. C. Caldwell, H. W. Caldwell & Son Company, Chicago, Ill.; L. H. Kittredge, Peerless Motor Car Company, Cleveland, Ohio; B. B. Quillen, Cincinnati Planer Company, Cincinnati, Ohio. Councillors for one year, Paul B. Kendig, Seneca Falls Mfg. Company, Seneca Falls, N. Y.; M. K. Bowman, Griscom-Spencer Company, New York City; Herbert Rice, Waverly Company, Indianapolis, Ind. Councillors to serve unexpired terms, E. P. Robinson, Atlantic Works, East Boston, Mass.; W. A. Layman, Wagner Electric Mfg. Company, St. Louis, Mo.; George Mesta, Mesta Machine Company, Pittsburgh, Pa. Honorary councillor, M. H. Barker, American Tool & Machine Company, Boston, Mass.

Messrs. Copeland, Barker and Walter Sayle were appointed a Nominating Committee for the ensuing year. The new president, in making his speech of thanks, advocated the appointment of a committee to investigate the premium system. There were short speeches from some of the other officers and several members eulogizing the new executive. The newly elected Administrative Council met immediately following the convention's adjournment. Robert Wuest was reappointed commissioner, after several members had spoken in glowing terms of the work accomplished by him during the year.

#### German and American Freight Rates Compared

Opportunity for comparing the iron and steel freight rates of this country with those of the Government railroads of Germany is afforded in a report of the German iron and steel industry, prepared for the Department of Commerce and Labor by its special agent, Charles M. Pepper. The report was prepared in compliance with an act of Congress of May 22, 1908, authorizing an investigation of trade conditions abroad. Much of the material contained in this report is being made a subject of comment in the tariff discussion in Congress. The railroad freight on steel products in Germany is, of course, only one of numerous matters bearing on the steel trade which are discussed in the report, but such rates are treated as one of the important factors governing the steel industry in that country.

The German Government, through its control of railroads, as in other ways, has done much to foster the foreign business of German steel manufacturers, and in comparing the freight rates in that country with those made by our railroads here, the interest in the comparison is heightened by the fact that it affects a trade which is specially favored in Germany, whereas the rates on steel products here are fixed by the railroads without any direct intervention by Government authority, and merely in pursuance of the general policy of the railroads of promoting industries by fixing rates which will stimulate traffic.

The Pennsylvania Railroad is the typical steel and iron road of the country. Serving as it does the great Pittsburgh District, as well as other centers of steel production, its freight tonnage of steel and iron products reaches an enormous total. Its rates on steel and iron have been taken as a basis for a comparison between such rates here and similar rates in Germany. The comparison shows that in most instances the rates in this country are lower than those in Germany on similar products for like distances.

The German scheme of fixing rates on iron and steel products is thus stated in the Pepper report: "In fixing the transportation rates ore is treated as primary raw material, the same as agricultural products, and is, therefore, given the lowest rates in the freight schedules. This treatment has been extended to the ores from the Meurthe-Moselle district in France. Iron and steel products come under special tariffs which have been devised by the government on the principle of encouraging the manufacturing industries."

The following tables, made up from data contained in the Pepper report, and from figures obtained from the Pennsylvania Railroad, afford a comparison between our rates and those of Germany on steel and iron:

Freight Rates on Iron and Steel Products.

	Miles.	Domestic rates. Per ton.	
		Germany.	U. S.
Cologne to Antwerp.....	132	Machinery .....	\$2.629 \$2.80
Duncannon, Pa., to Phil.....	134	Other man. of steel .....	2.217 1.50
		Billets .....	1.60 1.50
		Pig iron .....	1.60 1.15
Duesseldorf to Antwerp.....	115	Machinery .....	2.441 2.20
Chester, Pa., to N. Y.....	122	Other man. of steel .....	2.067 1.80
		Billets .....	1.372 1.80
		Pig iron .....	1.372 1.40
Cologne to Hamburg.....	264	Machinery .....	3.292 2.80
Johnstown to Baltimore.....	262	Other man. of steel .....	2.568 2.80
		Billets .....	2.424 2.00
		Pig iron .....	2.424 1.85
Cologne to Bremen.....	204	Machinery .....	2.52 3.00
Willmsport to Balto.....	197	Other man. of steel .....	2.04 2.00
		Billets .....	1.726 1.70
		Pig iron .....	1.726 1.55
Duesseldorf to Bremen.....	181	Machinery .....	2.256 ...
Wilkes-Barre to Phila.....	185	Other man. of steel .....	1.824 2.00
		Billets .....	1.696 1.70
		Pig iron .....	1.696 1.60

Comparison of rates on pig iron shows lower rates here in nearly all the instances cited than for similar distances in Germany. From Luxembourg to Bochum, a distance of 194 miles, the rate is \$1.272 per ton, against \$1.14 per ton charged here from Erie, Pa., to Etna, Pa., a distance of 212 miles; from Luxembourg to Dortmund, 206 miles, the rate is \$1.272, and from Erie, Pa., to Pittsburgh, 216 miles, it is \$1.14. The difference in favor of our rates on iron ore is equally striking in the case of other similar comparisons of rates.

The slightly higher rate on pig iron quoted from Chester, Pa., to New York, over the rate from Duesseldorf to Antwerp, for domestic shipments, is more than offset by the fact that the former distance is greater by seven miles. A similar explanation attaches to the rate on billets from Duesseldorf to Bremen. The only case noted in this table in which the domestic German rate on billets is lower than the rate for a similar distance here is on shipments from Duesseldorf to Antwerp, where the German rate is directly affected by the availability of water transportation on the Rhine between these two points. The rates on machinery and other manufactured iron and steel also afford a number of instances in which the rates here are below the German rates.

E. F. McCool, manager of the Pioneer Foundry & Machine Works, Victor, Colo., has invented a new system of automatically controlling self-unloading larries, which is in very effective operation in that vicinity.

## Industrial Training Through Apprentice Systems.\*

BY E. P. BULLARD.

The financial statement of every organization, large or small, public or private, summarizes the assets and liabilities of that organization and details with more or less accuracy the items composing them. Good form in these matters forbids the inclusion of any but tangible assets and actual liabilities, yet every organization is dependent for its ultimate success on the personnel of its executive and working force, which may be an actual asset if efficient and aggressive, or a certain liability if inefficient and decadent.

Efficient organization is admittedly the keynote of success. All available resources are exhausted by the modern business manager for material to construct his product, for adequate means for financing his operations, and for energetic men to develop and execute his ideas.

We frequently hear that Mr. Blank is a great man; he is identified with a dozen or more large corporations; his name alone insures success to those who associate with him. We ask, How can he intelligently direct so many large and widely diversified industries? Why do his subordinates succeed and prosper? The answer is plain. He is a judge of men. He selects the right man for the place, reposes confidence in him, and through him dominates and controls an industry even as a general through his subordinates dominates and controls an army. He recognizes the fact that these men on whom he depends are an asset of his business, as much as is the capital invested, and makes provision to supplement them as necessity demands as he provides for a future supply of raw material or sufficient capital to carry out his projects.

He may be able for a time to secure all the men he needs from others who have trained and developed them, as he may be able to borrow money for the development of his business, but he will have to make both men and money before his success is assured. Every enterprise requires men skilled in the manipulation of its affairs, specialists in its particular line, versed in its various details and operations. The supremacy of an industry, a community or a nation is dependent upon the skill and intelligence of its working people.

### The Scarcity of Really Skilled Men.

Prior to the recent business depression the utmost difficulty was experienced by employers of labor in securing sufficient numbers of skilled workmen to properly carry on their business. It was no uncommon experience for a concern to hire and discharge five men for every one retained. Really skilled men were not to be had at all in certain lines, and development was arrested on account of the inability to get desirable men. On the other hand, inefficient and unskilled help was plentiful.

It is admitted by all that we need more skilled men, and that some means must be devised for developing the inefficient and unskilled so that they may be valuable to themselves, their employers and the community in which they live. Where can these men be found? The supply is inadequate to the demand. Our public schools do not educate for any particular trade; our colleges educate broadly but not specifically; our technical schools lay the foundation for engineering professions, but relatively few have an opportunity to avail themselves of the courses offered.

Ninety-five per cent. of the children who enter the public schools never reach high school, and less than 25 per cent. go above the fifth grade. This means that less than 6,000,000 out of 24,000,000 children who were enrolled in our public schools in 1907 will learn more than is taught in the primary grades.

The average child in the United States attends school for less than five years. What does this mean industrially? It means that if we are to have industrially intelligent workers we must devise means independent of our public school system for training and developing them.

\* Read before the National Metal Trades Association, New York, April, 1909.

### What Would Apprentice Systems Do Toward Raising Our Standard of Industrial Intelligence?

Carefully devised apprentice systems, successfully operated in the majority of our factories, would do much to augment the existing supply of skilled and efficient workmen. The need to employers of skilled workmen has already been pointed out, but not only are they necessary as producers, civilization itself has advanced along mechanical lines in such gigantic strides that there is a tremendous demand for and a serious lack of skilled men, simply to keep going the wheels of modern life—our towering buildings, our enormous ships, our great bridges—the thousands of mechanisms which are required to transport, to house, to feed, to clothe, to light, to heat and amuse our people present an immense field for trained men.

They would insure workmen being educated along definite lines, thereby meeting the demand for competent leaders and executors. It is of the utmost importance that those who are to occupy executive positions should have familiarized themselves with the various details of the work coming under their supervision; they should be able to decide whether the judgment of their subordinates is sound, whether the operations required to make some particular piece are correctly performed, whether the quantity and quality of production for which they are responsible is of the required standard. This knowledge can be gained only by actual contact with the work and a personal study of the conditions under which it is performed. Apprentice systems would offer to young men of limited means who would otherwise be forced into that large and growing class of unskilled labor an opportunity to learn a trade.

Poverty, disease and crime are frequently the result of ignorance and environment. Every individual, workman or capitalist, is buoyed up, spurred on, by hope. Picture to yourselves the unskilled workman, earning the minimum wage on which a man can live and support his family. His greatest anxiety is concerning steady employment for himself; his one hope, an opportunity for his children. Where is this opportunity to be found? Not in an education which yields no immediate return, for he cannot support them during that period. His sons must find work, and that as soon as the law will permit, and it must be work which will support them from the beginning, for the father cannot. This means that these boys must take situations which require little, if any, skill; situations which pay practically as much at the beginning as at the end; unskilled work, unskilled wages, with no chance of advancement in either skill or remuneration. So they go on through all their lives bequeathing to their sons what their fathers bequeathed to them—ignorance and poverty, possibly disease and a tendency for crime. What have they to hope for to buoy them up, to spur them on?

Give boys of this class an opportunity to learn a trade, to be skilled workmen and in demand, rather than unskilled and in no demand, and you solve a large problem in American economics. Apprentice systems offer this opportunity.

### Do Apprentice Systems Pay the Employer?

Most emphatically, yes. Many large and successful concerns that have had apprentice systems in operation for a period of years are unanimous in their statements that apprentice systems do pay. If properly instructed and intelligently directed, their employment is more profitable than the employment of the so-called skilled workman who has been available in the past. Apprentices pay as producers during their term of service; as competent skilled journeymen when they have completed their course, and as industrially intelligent foremen and executives later on. Those boys who leave at the termination of their apprenticeship become staunch supporters of the mother shop, always ready to say a good word for it; as loyal as college graduates to their alma mater, an unequaled advertising medium.

### Does It Pay the Employee to Serve An Apprenticeship?

I firmly believe that it does. He is raised from the ranks of unskilled labor and given an earning power which he could not otherwise command. He is taught

to work intelligently and to apply his mind to his work, thus increasing his opportunity for further development and advancement.

#### **What Provisions Should Apprenticeship Systems Make for the Employee?**

Apprenticeship systems should provide for a proper term of service to insure ample time for thorough instruction. A distinct proportion should exist between the period of time required to learn a trade and the degree of skilled required in the trade.

Apprenticeship systems should provide for sufficient remuneration to support the apprentice during his term of service. Applicants for apprenticeship courses will, in the majority of cases, come from the working classes; from the farms in many instances, and must of necessity have an opportunity for self-support during their period of apprenticeship.

Apprenticeship systems should provide instruction in the technique of the trade and allied studies. The average boy begins to learn his trade between the ages of 14 and 17 years. He has not advanced beyond the fifth grammar grade, and probably could not pass an examination on any subject which he has studied. He has not been taught to reason or apply such knowledge as he has. If he is to become a skilled mechanic, it is essential that he should be well grounded in the elementary studies which are allied to his trade. He should be taught at least the mathematics of his work, the technical terms usually employed, and sufficient reading, writing and spelling to supply the deficiencies of his common school education.

Apprenticeship systems should provide instructions in the manipulation and care of the appliances of the trade. I believe there are many here who either own or are responsible for valuable manufacturing equipment which is practically at the mercy of unskilled employees or un-instructed apprentices. The average employer would deny this statement, believing as he does that the foreman supervises and instructs his workmen and apprentices. As a matter of fact, the foreman seldom has time to explain to each man or boy such items as the necessity and economy of sufficient lubrication, the function of each mechanism, and the means which should be employed to obtain the most economical results. Being occupied with what are to him more important matters, he is content to let the boy find out these things for himself—an expensive and inefficient system. Every large plant maintains a repair department at a cost which is no inconsiderable portion of its operating expense. Instruction in the care and manipulation of the appliances which it uses would do much to reduce this item.

Apprenticeship systems should provide for the fostering of a spirit of ambition and desire for increased knowledge. Let the apprentice see that his diligence will be rewarded, that he may in time be foreman, superintendent, manager, if he applies himself to his work, and no difficulty will be experienced in securing all the boys required. If there is anything in a boy this will bring it out; if not, get one who will appreciate his opportunities.

#### **Apprenticeship Courses to Meet Special Conditions.**

As the employees of any industry may be divided into two classes, producers and non-producers, workers and executives, and as there is need for trained men in each of these classes, I recommend that apprenticeship courses be arranged to meet these conditions. Let the boy who is bright and ambitious, and who otherwise shows the necessary qualifications become more than a mere workman, have an opportunity to learn the full trade, including instruction in the studies allied to the trade. Impress upon him the fact that he is given an exceptional opportunity, and demand in return exceptional interest and effort.

Advance these boys systematically through the course and weed out such as are not up to high standard. Select your executives as far as possible from among their number and thus show them that their diligence and efforts will be rewarded. As the workers outrank in numbers those having executive ability, it is fully as im-

portant that as much attention be paid to the development of the latter as the former. Relatively few applicants for apprenticeship courses have any expectations of ever becoming more than skilled specialists. Why then waste time and money in teaching the full trade to a boy who has neither the intelligence nor ambition to become more than a mere specialist. Provide special courses for these boys covering the various branches of the trade; make the time of service relatively short and wages high as compared to the full apprenticeship course; give graduates of these special courses an opportunity to learn the full trade later on if they show special ability; allowing credit for the time already served on the special course. The full apprenticeship course would train boys to fill executive positions. The special courses would develop skilled workmen with a minimum expenditure of time and money.

#### **Labor Unions and the Apprenticeship System.**

What is the attitude of labor unions toward the apprenticeship system? No labor union having the welfare of the workman at heart can be opposed to well organized and well conducted apprenticeship courses. As well be opposed to our public school system on the ground that education is dangerous.

The labor union which sets its seal of disapproval upon well organized and well conducted apprenticeship courses admits its ignorance of industrial and social developments and requirements. It should be recognized as hostile to the best interests of employer and employee alike, and should not be tolerated in any community. Labor unions can in no way more conclusively show their interest in the welfare of the workman than by indorsing and furthering the adoption of apprenticeship systems and schools.

The apprenticeship school is a necessary adjunct to any well organized apprenticeship system. Few concerns are large enough to support a school of their own as is done at Lynn and Schenectady, and not every community is prepared to establish a technical school such as Winona or Cincinnati University. Fortunately, however, like industries usually locate in the same neighborhood; so that it is possible for manufacturers employing a similar class of labor to co-operate in the establishment and maintenance of apprenticeship schools.

In Bridgeport, Conn., this has been done very successfully. The members of the local manufacturers' association, working in conjunction with the Y. M. C. A., have established a school for apprentices, who attend class two hours per day five days a week. The boys are paid regular wages for the time they spend in the class room, and the entire expense for the instructor, who is especially employed for this purpose, is borne by the manufacturers who have boys in the school. The Y. M. C. A. was selected because the building—which is well equipped—was provided with class rooms and had all facilities for carrying on the work. The courses are laid out by a committee composed of manufacturers, and the work is directly under their supervision and control. The expenses are nominal and the results secured thus far are satisfactory.

**The Standard Steel Company.**—This company, which was recently incorporated by a number of Cleveland men with a capitalization of \$40,000, has purchased a site in the suburban town of Bedford, Ohio, where a thoroughly equipped plant will be built for finishing and polishing black sheets for steel ranges, ovens and other purposes. A building, 70 x 100 ft., with 35-ft. lean-tos will be erected. The building will be of steel construction, for which a contract has been let to the Wm. B. Sealie & Sons Company, Pittsburgh. The plant will be equipped with two finishing rolls, furnaces, &c. Steam motive power will be used. The company is now in the market for the necessary machinery and power equipment. L. A. Osborn is president; R. E. Curtis, vice-president; T. G. Williams, secretary, and C. R. Williams, treasurer and general manager. The plant will be conveniently located on the line of the Wheeling & Lake Erie Railroad. It is expected that it will be ready for operation about August 1.

## Employers' Liability for Accidents.\*

### Probable Changes in the Existing Law.

BY EPAPHRODITUS PECK.

The present state of the law of the employers' liability is satisfactory to no one, unless it may be to the ambulance chasing type of lawyers. By employers, by labor leaders, by economists, by law teachers, by judges, it has been condemned. The most recent and comprehensive text writer on the subject says in his preface that this subject "may, without any exaggeration, be said to enjoy the unenviable distinction of having been the occasion of a larger number of conflicting doctrines and inconsistent decisions than any other branch of the law." Lord Cockburn, one of the judges of the highest court of Great Britain, said in a judicial opinion, speaking of the so-called fellow-servant rule, by which an employee cannot recover from his employer for an injury caused by the negligence of a fellow-servant:

I have rarely come upon any principle that seems less reconcilable to legal reason. I can conceive some reasons for exempting the employer from liability altogether, but not one for exempting him only when those who act for him injure one of themselves. It rather seems to me that those are the very persons who have the strongest claim upon him for reparation, because they incur danger on his behalf.

The Supreme Court of Errors in Connecticut declared in 1885:

The defense of common employment has little of reason or principle to support it, and the tendency in nearly all jurisdictions is to limit rather than enlarge its range. It must be conceded that it cannot rest on reasons drawn from considerations of justice or of public policy. And one of the judges of the same court added in 1898: "The evil is too deep-seated to be remedied by judicial action; it needs radical treatment by wise legislation."

#### Many Legislative Proposals.

I think it is safe to assert, though of course I have not examined the journals of every American Legislature, that there has not been a session of an American Congress or State Legislature in 10 years in which bills have not been introduced for amendment of the law of employers' liability; the President of the United States, the Secretary of Commerce and Labor and the Governors of many of our States have asked for remedial legislation, and nothing shows more strikingly the conservatism of our State Legislatures and their deference to the fears of business interests, than the fact that, while the British Parliament has passed and twice extended a thorough going measure of employers' liability, and while Germany, France, Italy and practically every country of Europe, except Russia and Turkey have passed statutes dealing with the question by the method of compulsory insurance, the demand for reform has thus far gone substantially unheeded in the United States. The State of Colorado alone has abolished the fellow-servant rule; a dozen other States have abolished it as to railroads, or as to railroads and mines, and nearly all the others have passed statutes which codify the former rules and reform them in minor details.

The Federal Congress has also enacted a substantial reform act, though far less drastic than the British one, which, of course, applies only to employees in interstate commerce. But the attacks on the vulnerable structure are likely to continue until more complete destruction has been wrought than by the dents and cracks already given.

#### Employers' Negligence the Basis of Claims.

At present a workman's right of action against his employer for an injury received in the course of his employment rests on the theory of the master's negligence. In bringing a suit the man must accuse the master of wrongful neglect in the management of his business; if the injury was a pure accident, if it arose out of the unavoidable risks of the business, if it was imputable to the negligence of some other workman, even (in most States) to the negligence of the in-

jured man's foreman or boss, the employer is not liable.

This primary fact, that the master must be convicted of negligence, or a wrongful act, and a wrongful act not of a subordinate employee, but of the master himself, or of some manager or superintendent who stands in the master's place, a vice-principal as the legal phrase is, tends to put the claim on a hostile footing at once. The injured workman is not asking the master to meet a legitimate and natural expense of the business; he is charging him with a wrongful act, and demanding his punishment by a judgment for damages. Thus the claim becomes an accusation, the request for damages a demand for punishment, and the master naturally feels himself justified in resisting, indeed almost bound to resist.

With the superior resources of the master, and the various lines of defense which the law gives to him, in perhaps nine cases out of ten the workman's claim is finally defeated; both sides bear heavy costs of litigation, a rankling sore is left to embitter the future relations of master and men, and the workman bears not only the pain and disfigurement of his injury, but also the pecuniary loss, increased by his expenses of suit. In the tenth case the workman wins; and in that case he gets from the sympathy of the jury, and their undefined sense that the master's defense is not a just one, a verdict for much more than he ought to have; and the verdict is doubled to the man who pays it, and halved to the man who receives it, by the costs of litigation.

In either case what has been accomplished is not a fair and friendly adjustment between man and man of a business loss; but a victory after a fight, in which the defeated party is thoroughly crippled, and the winner is not without some bruises.

#### Accidents an Expense of Business.

A certain manufacturing plant has 500 expensive machines of various kinds; it employs 1000 men. In its operation 20 machines require to be replaced and 50 to be repaired every year. Of course, the cost of repairing the machines that are slightly broken, and replacing those that are ruined, is charged to operating expenses. But in the same establishment 10 men are killed or crippled every year, and 25 men receive injuries which cause loss of time and require medical or surgical care. Why should not this also be treated as an expense of the business?

It is, in fact, an expense of the business. The operation of the plant results in a profit to the owners, it benefits the general public by producing the manufactured article at a far less cost than it could be produced for by mere primitive methods, but it has the countervailing disadvantage of constant danger and frequent injury to the limbs and lives of its operatives. It can hardly be the rule of justice that the owners and the public should receive and enjoy the profits of the industry, while its incidental cost in life and health, the other side of the economic balance sheet, should be cast upon the shoulders least able to bear it.

#### Cases Involving Negligence.

This proposition it is hardly possible to deny or to argue against as to injuries arising from the inherent risks of the business—those which occur necessarily and invariably and without definite fault on any one's part. As to those which occur by the fault of some other workman than the one who is injured, the argument is almost equally clear. The employer selected the negligent man, he had the power to watch his work and to discharge him if he proved unfit for his place, the man is working under the owner's commands and to make a profit for him, the owner would be liable to a third party for his negligence in the course of his work, and the rule that he is not equally liable to a fellow-servant is one which requires some special reasoning to explain, still more to justify it.

But if the injured man has been negligent himself and the injury is in part or wholly the result of his own negligence, there is at least a plausible argument against the master's liability. Even to this something may be said in reply. In the strain of modern factory work, negligence itself is an invariable and incidental result of the business. Even the most prudent man, coming in con-

\* Extracts from an address before the National Metal Trades Association, New York, April 15, 1909. Mr. Peck is lecturer on the law of master and servant in the Law Department of Yale University.

tact with a point of danger a hundred times a day, cannot always have his mind intent upon, and his body responsive to, the danger. Very significant statistics have been compiled in Germany, showing that the great majority of factory accidents occur during the later hours of the working day, when mind and body are fagged and incapable of the same sharp attention that they gave earlier in the day. There is a certain unfairness in measuring in cold blood, in the very different atmosphere of the judge's chamber or the jury room, the momentary action of a man in the tumult and fatigue of the factory, and deciding that because the man's attention failed and his fingers dropped into the dangerous spot, he is to bear the life of a cripple as a just penalty of his fault without contribution to his loss by the master for whose profit the danger was incurred.

It must be remembered that the workman must always bear the personal suffering, the possible disfigurement, the danger of death. And the workman is surely peculiarly constituted who will expose his body and life more freely to danger because he is assured of a compensation for his pecuniary loss.

Doubtless the general adoption of liability insurance will have the same effect in improving conditions, by leading the insurance experts to suggest improvements to the factory owner, and offer lower rates to secure their adoption, that it has already had in the very similar matter of fire hazard. It is often said that the spread of liability insurance has aggravated the existing evils of the situation between the master and servant by eliminating the personal and humane element from their negotiations, and substituting the cold-blooded corporation for the kind master; perhaps in the way that I have indicated liability insurance may ultimately vindicate itself.

#### Workmen's Compensation and Arbitration.

In accordance with the theory that I have tried to outline, the rule of the workman's compensation for injuries received in the course of employment, unless caused by his own serious or wilful misconduct, has been adopted in England in place of the common law liability of the master to pay damages for his culpable negligence. A commission appointed by the Massachusetts Legislature, of which Carroll D. Wright was chairman, recommended the adoption of a similar act in Massachusetts in 1904. One feature much emphasized in the English act and in the Massachusetts report is the establishment of a system of arbitration to fix the amount of compensation, and of a rule for measuring the compensation by a fixed ratio to the man's wages, varying with the extent of his disability, and, in the case of death, with the degree of dependence of his surviving relatives upon his earnings. This is expected greatly to lessen litigation, the liability being fixed, and the amount of compensation a mere matter of computation.

The provisions of our American constitutions, which guarantee trial by jury to all litigants, may create difficulties in following the British act in the first, at least, of these special provisions; but the Massachusetts commission thought them not insuperable. Massachusetts did not adopt the recommendations of her commission, and no American State has yet adopted this broad basis of liability. Perhaps none will at present. Our division into 46 separate jurisdictions, each of which must adopt a plan of reform to put it into complete operation, and the natural argument of the employer in each State that he cannot fairly be subjected to new burdens from which his competitors in other States are free, make the progress of economic changes slow in America.

But a general current of legislation favorable to the workman's side of the question is already in motion, and is likely to increase in volume and force. I believe that the great majority of American manufacturers desire to do justice as well as to make money, and that they will not desire obstinately to oppose any measure which they are convinced is a measure of right.

**The New England Foundrymen's Association.**—At the monthly meeting of this society, held at the Exchange Club, Boston, April 14, L. D. Burlingame, Brown &

Sharpe Mfg. Company, Providence, R. I., gave a very interesting talk on "Economics and Kinks in Pattern Making and Pattern Shop Management," which was followed by a discussion. At the business meeting, with Vice-President J. L. Anthony in the chair, a committee consisting of B. M. Shaw, Fred F. Stockwell and C. A. Read was appointed to make arrangements for transportation for the delegation from New England to the annual convention of the American Foundrymen's Association, to be held in Cincinnati in May. The usual dinner was enjoyed.

#### A New Pipe Mill at Haselton, Ohio.

Various reports of a new bond issue by the Republic Iron & Steel Company for the construction of additional plant have appeared recently. No bond issue is now contemplated by the company, it is stated, but official announcement is made as follows by Chairman John A. Topping of a new enterprise which will utilize a portion of the site at Haselton, Ohio, which the company has held for some time with a view to future extensions:

"Interests closely identified with the Republic Iron & Steel Company have organized the Haselton Steel Tube Company and will construct on the property recently acquired from the Republic Iron & Steel Company, on the Mahoning River, near Youngstown, Ohio, a modern plant for the manufacture of both steel and iron pipe. The construction of the plant will be under the general supervision of the Republic Iron & Steel Company, and upon completion of the improvements contemplated the new tube works will secure its supply of raw material from the Republic Iron & Steel Company, and the finished product will be sold by the sales department of the Republic Iron & Steel Company, under proper contract arrangements, so that the interest of both companies will be promoted."

It is understood that the new undertaking will represent an outlay of about \$1,500,000. Electric drive will be utilized to a large extent, power being derived from gas engines depending on the waste gases of the Republic Company's three blast furnaces at Haselton. The new tube plant will furnish an outlet for a portion of the product of the Bessemer steel works at Youngstown, the sale of skelp to tube mills having been for some time a branch of the Republic Iron & Steel Company's business. It has been known for some time that the building of an open hearth steel plant on the Haselton tract has been considered by the directors of the company, but no definite steps have been taken in that direction as yet.

#### Monel Metal Wire.

The Orford Copper Company, 43 Exchange place, New York City, producer of Monel metal, has granted the sole right for manufacturing wire and ribbon of it to the Driver-Harris Wire Company, Newark, N. J. The latter company has just finished erecting and equipping a large wire rod rolling mill and has greatly extended its wire drawing departments to handle this new branch of its extensive wire manufacturing business.

Monel metal is peculiarly adapted to the production of the better grades of wire, particularly where a tough, strong, non-corrosive product is required. It is a natural alloy containing about 70 to 75 per cent. nickel, 1 1/2 per cent. iron, 1 per cent. manganese and the balance copper. In smelting and refining the ore from which Monel metal is made, the nickel and copper are not extracted or separated, and appear in the finished alloy in the same relative proportions. Nickel as a pure metal is relatively expensive because of the difficulty of isolating it. When the treatment consists merely of removing the impurities it can be made to sell at a cost comparable with German silver. The tensile strength of Monel metal wire rolled, annealed and cold drawn is 110,000 lb. per sq. in., and the elastic limit 80,000 lb. per sq. in. The melting point is above 2400 degrees F., and the specific gravity 8.15. Its electrical resistance per mil.-ft. is 256 ohms. Like nickel it is highly resistant to the action of acids.

## Profit Sharing.

### Two Interesting Papers Read at the New York Meeting of the National Metal Trades Association.

#### R. T. Crane's Experience.

I respond with pleasure to your request that I prepare a paper on profit sharing, for in doing so I speak of my own experiments in this line and my opinions on the subject to men who, like myself, have to deal with practical things—men who do not ask for theories, but for results.

In this instance the character of my audience determines the treatment of this subject which I propose to give. I shall have nothing to say on the historical side, except in so far as the development of the theory and practice of profit sharing in foreign countries tended to influence me in trying the matter out for myself.

#### THE PROFIT SHARING AGITATION IN ENGLAND.

If memory serves me, it was some 40 years ago that John Bright of Birmingham, England, took a leading part in discussing the various methods for profit sharing, or co-operative industry, then advanced. In this, as a manufacturer, doubtless he was influenced by existing differences between labor and capital, which were shown in frequent strikes and lockouts and a general attitude of suspicion between employer and employee throughout the industrial centers of England.

Mr. Bright believed that some rational system of profit sharing, some working method of co-operation between capital and labor, would reconcile these differences, allay these suspicions and give to industrial activities a greater steadiness. The outcome of this agitation, as I recall it, was that a number of business firms in England adopted a system of profit sharing something like this:

Pay first to labor its current market value; second, pay to capital a fair interest; third, divide the remaining profit, if any, into two equal parts, one part going to labor and the other to capital.

This plan seemed to meet with general favor. I became deeply interested in the subject and wrote to Mr. Bright for full details of the scheme, which he was good enough to send me.

#### MR. CRANE'S FIRST EXPERIMENT.

From this information I worked out what seemed to me to be an application of the English experiment to my own conditions and gave it a trial in my own business. At the expiration of two years the plan was abandoned. It did not work out satisfactorily, either to my employees or myself. After careful inquiry among my foremen I could not find any evidence that my profit sharing was making my workmen either more industrious or more faithful to my interests.

Even in England it soon developed that the workmen themselves came to oppose the scheme, doubtless on the ground that it tended to increase production—a condition which seems to be the chief stumbling block in the way of any scheme of this character.

My conclusion, after this trial, was that all profit sharing projects up to that time, while looking and sounding well in theory, did not turn out as expected when put to the test of practice.

Perhaps it is only just to say here that the experiment I made was not a fair trial, as, in my opinion, it requires a good deal of time and a considerable amount of enthusiasm on the part of foremen to make any experiment along these lines effectual.

#### HIS SECOND EXPERIMENT.

My next experiment in this line was on an entirely different basis, but with the same objects in view. I put in operation a system by which our workmen were given an opportunity to buy the Crane Company's stock to an amount equal to their yearly salary. This, of course, gave the men who took advantage of it some share in the profits of the business, while at the same

time it required that they should put up their money with that of the company in order to share in the company's success.

By this method the Crane Company undoubtedly obtained some advantage in the closer co-operation of those of our employees who became stockholders, but the experiment has not been all that we desired or expected, for the reason that our workmen did not, to any large extent, avail themselves of the privilege.

It is difficult to explain why they did not, but my opinion is that, in the first place, many of them were unable to get as much as \$100 to pay for a share of stock. Further, I imagine that many of those who could have bought stock preferred to put their savings into homes for themselves rather than to invest it in any other way—particularly in a manufacturing company, where they do not seem to see as much security as in real estate. Your average workman is ready enough to share in the profits, but not to share in the risks of industrial or commercial enterprise.

#### THE PRESENT SYSTEM.

My third experiment—the Crane Company's present system of profit sharing—has been in operation for about eight years. It consists simply in the company making an out and out gift once a year to all of its employees who do not in any other way share in the profits of the company, such as stockholders, officials, &c.

The amount thus distributed among our workmen is determined by the success of the company for the year just past. For the first two or three years this amount was equal to 5 per cent. of the annual earnings of each employee; since then, and up to the present, we have been able to give each employee 10 per cent. of his annual earnings.

This amount is distributed about Christmas time, and the company prefers to refer to it as a "Christmas present." There are no restrictions as to length of service, position, &c. The employee who has been in the company's service a month is treated the same as the employee who has been with the company many years.

If an employee leaves the service of the company of his own accord or is dismissed for cause he thereby forfeits his share of the profits—or of the gift—for that year. But if an employee is laid off or his services dispensed with through no fault of his own, he is considered to be entitled to his share of the year's distribution up to the date of his leaving.

I am under the impression that this is as good a scheme as any that can be devised under existing industrial conditions. The company in no way is bound to continue it for all time; nevertheless, it is my earnest hope that it may be able to do so.

We have no disposition to pile up an enormous and unnecessary fortune, and I feel that in giving a portion of our earnings to our employees in this manner more good will be accomplished than by spending large sums, as some people do, in many other directions.

#### BELIEVES IN THE PRINCIPLE OF PROFIT.

So much, then, for my own experience in profit sharing plans. As for the principle itself, I believe in it. I believe that every employer should adopt some rational method whereby he may be in a position to divide some part of his yearly profits with his employees. Not only is this a good course from an ethical point of view, but it is a wise course from the viewpoint of business.

Even if from no nobler impulse, enlightened self-interest should prompt us to make this division, for we should remember that no gift is lost. In some form or other it will come back to the giver, and often in many fold greater than the gift itself.

While I may say that the Christmas giving of the Crane Company (call it "profit sharing," if you will) is governed by the spirit of kindness, the desire to be fair and just, we do not pretend to close our eyes to the fact that this giving pays, that our annual distribution of part of our profits is in the nature of a good investment.

Long before another time for giving returns, the gift of the previous Christmas has come back to the company in the way of better service, of greater enthusiasm, of a more coherent working force, and of a more pronounced

loyalty to the company and its interests on the part of its thousands of employees.

I believe that the reverse of our policy has equally patent results. The man who is close and niggardly with his employees, who pays not a cent more than the stipulated wage—and often pays that grudgingly—gets but the service he pays for. He does not get loyalty, or enthusiasm, or regard, nor does he deserve to get them. He gives nothing and he receives nothing; he loses by his failure to be generous and just. He lives a wretched existence, and he leaves nothing worth while to show for his life of labor.

From this and the plan the Crane Company actually has in operation you may see that I am a warm and consistent advocate of profit sharing as a principle of modern business. I may criticize some features of its application, some of the purely theoretical schemes for applying the principle, but with the principle itself I am in accord.

#### EMPLOYEES SHOULD SHARE IN LOSSES AS WELL AS PROFITS.

As I understand it, the principle is this: If an employer concedes it to be fair and just that his employees have a share in his profits, the employees should be equally willing to concede that they share with him in the losses. I cannot see that with any reasonable system of co-operation the employer is under any greater obligation to divide part of his profits with his employees than the employees are to divide a part of the losses with their employer. It would be a peculiar application of the principle of co-operation that would let the employees in for the good things of a fat year and leave the employer to bear the full burden of the lean year. I consider this recognition of mutual sharing, both of gains and losses, the basic principle of any rational system of profit sharing or co-operation that can be devised.

There is one thing that is perfectly clear regarding all co-operative enterprises, and that is that they always have failed where they have been new enterprises. At the same time investigation will show that there has been a number of immensely successful profit sharing enterprises, but I apprehend that they will be found to apply mainly to businesses in which the employers have to depend largely upon the honor and good faith of their workmen, such as, for example, decorators, retailers, &c., where the business necessarily is conducted on the merits of the employees.

I do not think the profit sharing principle can be applied so well in the case of salesmen selling on percentage, or where employees work on piece work or where the output of the day may be measured easily. Nevertheless, it is probable that a reasonable division of the profits would be found to pay in any business.

#### EQUAL DIVISION OF PROFITS OPPOSED.

A word or two regarding the theory of Mr. Bright that above a certain point profits should be divided equally between capital and labor. I took exception to this at the time it was proposed; I take a strong exception to it now. The chief objection to this theory is that the value of labor to a given industry can be definitely measured, while the value of capital cannot. This is particularly true of most of our modern industrial enterprises in which the invested capital is owned by the actual managers of the business. Few, if any, of these managers are drawing salaries commensurate with the skill and energy they put into the management and the responsibilities and risks attached to their investments. They have to depend for their compensation upon the profits earned by their capital.

The responsibility of labor is in no way to be compared with that of capital, and it is a manifestly and equitable proposition that demands an equal sharing in the profits of a business between capital and labor. I am of the opinion that there never was a time when so much skill and energy, so much brains and experience were put into business as is done to-day, and no ordinary salary—especially in a large business—would be proportionate to the services rendered by our modern managers.

As to any hard and fast scheme of profit sharing, I would say that there are all sorts of persons in business and I do not believe any one scheme can be devised that

would work satisfactorily all along the line. Some business men have only moderate ability, and this naturally brings them little or no profit. Between these and men of extraordinary ability we find all varieties and as many varying degrees of business success.

Surely it is not reasonable to say that the man who has only his capital in a business, the man who has his capital invested and in addition works hard early and late to make his business a success, the man who has just started in business and the man who has been in business successfully for many years, should be required to accept the same percentage of profit on their capital and divide all above that percentage equally with their employees.

For the reasons advanced and because our present plan has brought about a gratifying measure of satisfaction, both to us and to our employees, I am inclined to the opinion that our method of profit sharing—that is, a division of profits determined by the employer and based upon the success of the business for the year—is about as good as any that can be devised to meet the conditions under which business in general is conducted to-day.

#### CRANE EMPLOYEES' INTERESTS CARED FOR FURTHER.

In closing this paper I might add that I do not consider a division of profits, or a gift of part of the profits, at the close of a year, as all of a profit sharing plan. In our own case, for example, we do more than this, and I think I am warranted in speaking of these other things as in the nature of profit sharing.

For instance, we have a pension and a sick relief plan for the benefit of our workmen and their families, the whole expense of which is borne by the Crane Company.

Then we maintain, solely at our own expense, a physician's office and surgery, a house physician for our men employees and a woman physician for our girl employees. The services of our physicians and the necessary medicines in case of sickness or accident are given free to such of our employees as may need them.

Naturally the expense of this pension and sick relief plan and of our physicians, coming wholly from the company's treasury—and the benefits going wholly to our employees—reduces the company's profits; and to the extent of this reduction and this benefit the company is sharing its profits with its employees, throughout the year, in addition to the gift of 10 per cent. of the salaries and wages of the employees made at the end of the year.

#### N. O. Nelson's Views.

Quite recently profit sharing has received indorsement in high quarters. Mr. Roosevelt, in his last annual message, said that labor should, by some systematic plan, become part owners in capital with which it works. Mr. Ingalls, chairman of the Big Four Board, said in a Civic Federation speech that the railroads should adopt profit sharing with employees. In Mr. Carnegie's last book he declares that there must come a partnership between labor and capital; that the capital should be owned by those who use it—profit sharing. In the last annual congress of profit sharing concerns in Great Britain former Minister Balfour made a statesmanlike argument for the system.

#### DEFINITION OF PROFIT SHARING.

Profit sharing is a distinctive term for a systematic division of general profits with the entire body of employees in proportion to their wages and in a fixed proportion to the capital. Not necessarily, but usually and properly, the dividend to wages is capitalized and paid in the stock of the employing corporation. Out of the net profits interest is allowed at bank rate on the net capital, and the remainder is divided by equal percentage on the wages and the capital, or on the wages and the interest, or a compromise between these two.

It is essential that the proportions be announced in advance, that all regular employees of whatever grade be included, that no new conditions be imposed, and that the terms be sufficiently liberal to yield a respectable dividend. There is no change in the plan of business until it comes to disposing of the profits. There is neither right nor inducement given to interfere or criticize.

The contingent interest in the profits is a constant

influence toward care, industry and good faith. When the wage earners become stockholders and receive cash dividends on their stock, they are doubly interested. These definite advantages, besides increasing the efficiency of the existing force, tend to draw and retain the better class and eliminate the inferior.

It is a familiar practice to share profits with heads of departments, but these are less in need of stimulus than the common employees. The business heads are energetic and attentive by nature; they have promotions and elastic salaries in view. The common mass have little or none of this to inspire them; there are influences to make them indifferent or antagonistic. Making a clerk or mechanic or laborer a profit earner and owner in the property he works with makes a man of him; gives him a self-interest jointly with the employer, some sense of responsibility.

#### PROFIT SHARING ACTS AUTOMATICALLY.

Unlike the selling of stock to employees, profit sharing acts automatically and equally on all. If they are fit to employ, they are fit to share. The relative value of their work is fixed by their pay and their dividend is in the same proportion. A fraction only of employees will elect to set aside a part of their wages and obligate themselves in the purchase of stock; they are unfamiliar with such investments, they do not want to deprive themselves of the ready money, they are suspicious of stocks. Profit sharing demands nothing of a workman; it offers a reward for that which lies in his way to give.

An instant and decisive response must not be expected. Men accustomed to minimum work will not immediately change. Give it time; the result is sure to come. It is difficult or impossible to tell by sight the difference in men's work; it is impossible to tell with certainty by the year's profit, as many other elements affect the profits. Profit sharing should be adopted for the elementary reasons of good will, self interest, mutual interest and obligation of the strong to the weaker. Following upon this recognition are the public and social effects of a limited partnership between all who are associated in a joint enterprise or related work.

Profit sharing has a record of unbroken success for 65 years in the pioneer house of Leclaire & Co., house painters and decorators in Paris, France, now employing about 1400 men. Next in age and prominence is the stove and iron works of Godin & Co., of France and Belgium, now employing 2100 men. Largest of all is the South Metropolitan Gas Works of London, employing about 5000 men, the workmen owning over a million of its capital. A dozen or more other British gas works have adopted the same plan. The great soap works of Lever Brothers, near Liverpool; the woolen mills of Taylor Brothers and William Thomson & Son, the shipyards of Sir Christopher Furness, with a large number of other concerns, great and small, in Great Britain and on the continent, are substantially profit sharing.

#### THE N. O. NELSON MFG. COMPANY'S PROFIT-SHARING PLAN.

In my own company we adopted profit sharing in 1886 by paying an equal dividend on salaries, wages and capital, after first paying interest on the capital. In 1894 we began allowing double the rate to wages as to capital. In 1905 we allotted all the profits in excess of 6 per cent. on capital to the customers and the employees, and this is now the plan. The customers and employees own somewhat over one-half million dollar capital and half million surplus. The dividends for the last four years have average 22½ per cent. on salaries and wages and 36 per cent. to customers on the gross profits of their purchases. The business expenses have declined more than one-fourth in proportion to sales, and we believe the effectiveness of labor is much above the ordinary.

For a number of years following the panic of 1893 we paid no dividends and there was no instance of complaint. In midsummer of the panic we called a meeting of all the employees and explained that we could better keep running full if we were accommodating to the customers, and that this could be materially aided by their agreeing to a cut in wages and salaries of 25 per cent. until times became easier. The suggestion was adopted without any objection or a dissenting vote. The reduced

wages were in effect for three months, until we restored them voluntarily.

Losing years rarely occur to prosperous concerns, and only prosperous ones have profits to share.

The theoretical criticism that losses must be shared if profits are is met by the proper practice in any business of setting aside a surplus fund out of which any loss will be taken and not out of the capital. As the surplus has been taken out of the profits before the annual division, labor has contributed its portion and thus makes good its share of the loss.

It should, however, be observed that profit sharing is not a doctrinaire or academic theory, but a practical way of enlisting the profit making capacity of the entire force and thus assuring against loss. In 24 years of it we have had no losing year.

#### NOT A GUARANTEE AGAINST STRIKES.

Profit sharing is a peace measure, but it is not a guarantee against strikes. There can still be differences, but they will be rare. There are still the class influences, but they are weakened. For these reasons, profit sharing is not favorably regarded by union leaders. In our 23 years of continuous experience, we have had no instance of attempted interference or criticism or assertion of prerogative by right of stock holding or profit sharing, neither has there been any instance of difference arising between the employees and the management. There have been strikes by order of outside union authority and for infraction of union apprentice rules and boycotts. These strikes we have always resisted successfully, and at last gave the option to each employee of dividend and nonunion or union and no dividend. Within six months there remained only three union cards in our entire force, except one trade with about 20 men dependent on the building trades council and the teamsters in St. Louis. These men recognize their dilemma and make no complaint, nor have we.

Incidental to our profit sharing and the betterment of labor's conditions, we have for 19 years been using a portion of the profits and the employees a portion of their wages in building the town of Leclaire and workmen's homes. A net result of this combination of work, play, homes and attractive surroundings is that we have found no need of policemen, rules or boss. By the average of other towns and cities, we should have had to date 250 arrests; we have had none. All of our young people remain, invariably going to work when out of school. We have less than half the average death rate, 100 per cent. marriage and birth rates and no divorce rate. Men owning their own working capital and their own homes with comely surroundings and ample recreation will be healthy, peaceable and sociable.

Profit sharing needs to be instituted in a broad and liberal light, and to be conducted with patience and due regard for established traditions and prejudices. When so practiced it will not fail to justify the faith and hope of its projectors and do its share in promoting peace and good will between employers and employed.

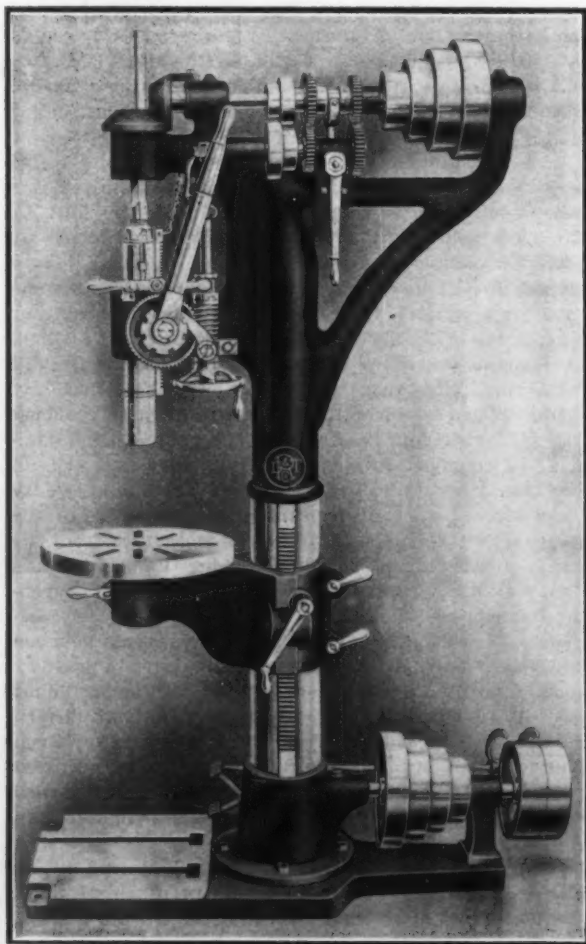
A. N. Hadley, 2032 Ashland avenue, Indianapolis, Ind., has invented a sugar cane harvester. One of the perfected machines is now being tested in Cuba. At a recent meeting of the Louisiana Sugar Planters' Association Mr. Hadley described the machine and a committee was appointed to investigate its merits. Gasoline or oil is the fuel used for operating. The machine cuts the cane at the bottom, strips it, tops it, ties it into bundles and dumps it in a cart. The experimental machine weighs 6500 lb., but changes are contemplated that will reduce the weight 1000 lb. Plans are formulating to organize a company to manufacture the machines and operate them under the direction of district superintendents.

The semiannual meeting of the American Institute of Chemical Engineers will be held June 24 and 25 at the Polytechnic Institute, Brooklyn, N. Y. The programme will consist of papers, excursions and an exhibit of chemical engineering apparatus. J. C. Olsen, Polytechnic Institute, Brooklyn, is secretary.

## Robertson's 21-In. Drill.

Even in its general lines there is something distinctive in the new 21-in. upright drill built by the Robertson Drill & Tool Company, Buffalo, N. Y. As a whole the machine has been made heavier and more powerful than usual, but the particular feature is the square spindle drive in place of a round spindle with feather and key. This drive gives equal or concentric drive with much less friction. As evidence of this fact it is stated that with the spline drive a 1-in. tap will raise a 500-lb. piece of work from the table, if it is not secured, before the spindle will follow the tap. This is accredited to side thrust. With the Robertson square equal drive it is claimed that the same piece of work requires no bolting to the table, thus proving that less power is required and that there is less friction.

The frame itself is especially strong. The column is



The New 21-In. Upright Drill Built by the Robertson Drill & Tool Company, Buffalo, N. Y.

5½ in. diameter and is ribbed, and the head is of reinforced design. The quill is 2½ in. diameter, the spindle through the quill 1 9-16 in. diameter, and the square drive through the crown gear is 1½ in. square. All of the parts are heavy and well ribbed. All gears are cut from solid metal, and the racks and small pinions are all steel cut. A new back gear is provided controlled by one handle, giving the direct or the back geared drive, or, in its neutral position, disengaging the drive altogether and stopping the spindle. The table is raised by a crank operating a worm gear and pinion, the latter engaging with the rack on the column. All clamps are provided with tail nuts, and every lever concerned in the control of the machine is conveniently placed.

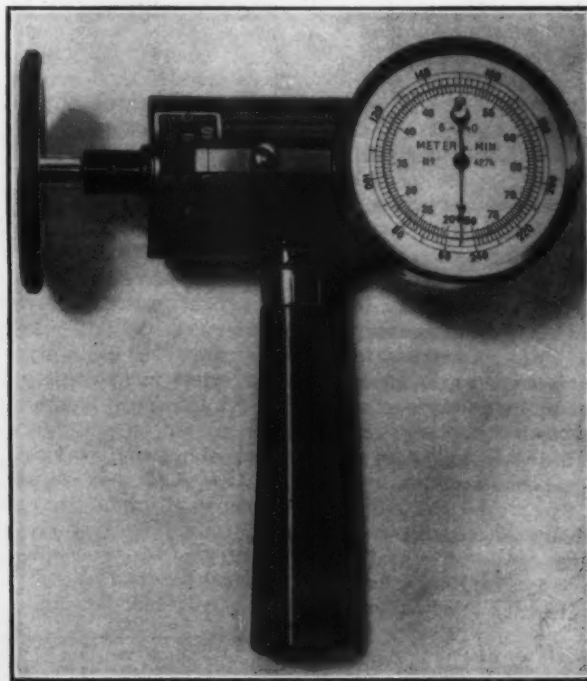
The countershaft is intended to run at 250 rev. per min., has tight and loose pulleys 8 in. diameter and 2½ in. face, and a cone pulley, the largest step of which is 9 in. diameter and the smallest 4¼ in. diameter, taking also a 2½-in. belt. Through the two cone pulleys, which are alike, four changes of speed are provided and with the back gear, eight. The machines are furnished either

with plain lever feed or wheel and lever feed, or wheel and lever and power feed, and with or without automatic stop for the feed. The illustration shows the machine with the entire combination. The crown gear is 5 in. in diameter and is driven by a bevel pinion 3¾ in. in diameter. The vertical travel of the spindle is 10 in. Its greatest distance from the table is 23½ in., and from the base 33 in. The end of the spindle has a No. 3 Morse taper socket. The machine will drill to the center of a 21¼ in. circle. The table diameter is 15¾ in., and its vertical travel 14 in. The net weight of the machine is 650 lb.

## The Cito Cut Meter.

For measuring the cutting speed of machine tools a new cut meter has been placed on the market by Schuchardt & Schutte, 90 West street, New York, known as the Cito, and built on the lines of the tachometers made by the firm. The indicating mechanism is actuated by accurately balanced centrifugal weights, and the readings are correct in any position. As the readings do not depend on magnetic action, these instruments, it is claimed by the makers, remain accurate under all shop conditions, and are not affected by the magnetic fields present in shops equipped with electric power. They also indicate with the work running in either direction.

The standard range of the Cito meters is from 20 to 600 ft. per minute, arranged in two scales, the first scale being from 20 to 120 ft. per minute, and the second range from 100 to 600 ft. per minute. Either range is thrown into action by moving the thumb slide on the face up or down to the desired range. The shell or case is made of aluminum, which reduces the weight to approximately 10½ oz. The handle can be unscrewed, which



The Cito Cut Meter Sold by Schuchardt & Schütte, New York. (For countries using English measure dial reads in feet per min. instead of meters per min.)

makes it conveniently portable. With each instrument a rubber tip is also furnished for recording revolutions of shafts up to 900 rev. per min. When used as a tachometer a formula is furnished for converting the scale reading in feet to the equivalent in revolutions per minute. The meter is put up in a leather case, with an extra tier for the measuring disk.

The W. R. Beatty Machinery & Equipment Company, 410 House Building, Pittsburgh, has received an order from the West Penn Steel Company, Pittsburgh, for a 45-ton standard gauge locomotive for yard use about its new mill being erected at Brackenridge, Pa.

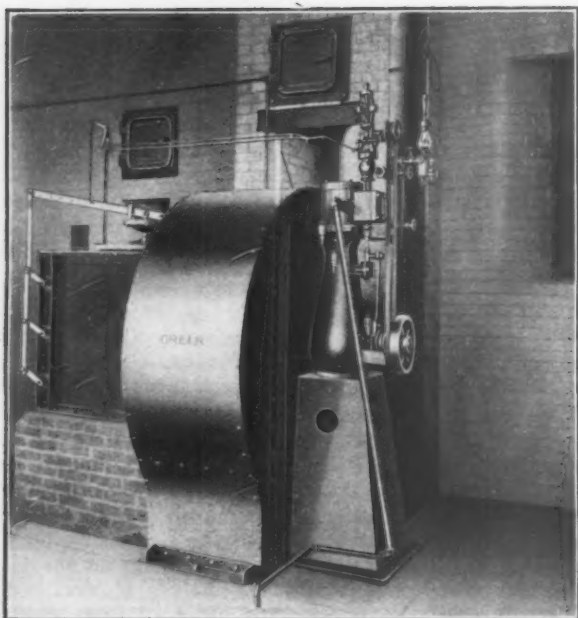


Fig. 1.—Part of an Installation in the Atlantic City Sewerage Company's Plant.

## The Green Automatic Furnace Draft Control.

To burn coal rapidly without smoke and with good economy, a good draft is required, but all air passed through the furnace in excess of that necessary to burn the coal lowers the furnace temperature and wastes heat in the flue gases. Since furnace conditions change from moment to moment, due to the operations of firing, or to the fluctuations in the demand for steam, the desideratum is a strong draft under perfectly automatic control.

Many chimneys do not supply a draft intense enough to burn the cheaper grades of coal. Old chimneys put up when the power demands of the plant were smaller rarely have sufficient capacity. Supplementing chimneys by forced draft fans delivering air into the ash pit is effective in supplying the required amount of air and intensity of draft, but has certain drawbacks. The blast of air may be too strong, burning holes in the fire and passing too much air through the furnace. As the furnace is under pressure from the fan, hot gases, cinders and flame may escape into the fireroom when the fire doors are opened, and for the same reason hot gases may leak outward through cracks and crevices in the setting, rapidly deteriorating the latter and wasting considerable heat.

Induced draft does not have the objection just mentioned, but requires larger fans, since they must be of sufficient capacity to handle the gases after they have been rarified by heat. Induced draft fans must be specially constructed so that the bearings will not be injured by heat, and space must be found for them at some point in the flue between the boiler setting and the chim-

ney. With induced draft, although no hot gases escape from the furnace, there is an infiltration of cold air, often greatly in excess of the requirements of combustion.

The automatic draft control system of the Green Fuel Economizer Company, Matteawan, N. Y., is declared to unite the desirable qualities of forced draft with those of induced draft. It so regulates the flue damper and the fan engine in combination that a neutral pressure is maintained in the furnace, just enough draft being supplied to the fan to propel the gases through the fire and by the chimney to draw them out through the boiler and up the stack. As the apparatus is controlled by the steam pressure, it serves to maintain it uniform at all times. By maintaining a neutral draft in the furnace itself, no air or gases leak inward or outward, no heat is wasted from either of these causes, and the boiler setting is protected from overheating or chilling.

Fig. 2 is a perspective sketch illustrating a typical installation of this system of draft control. Fig. 1 shows a part of the apparatus and Fig. 3 the plan of an actual installation at the Atlantic City Sewerage Company's plant which supplies and regulates the draft for two 100-hp. horizontal return tubular boilers and one 200-hp. Babcock & Wilcox boiler burning No. 2 buckwheat coal.

The controller, located near the forced draft fan at A, under the influence of steam pressure, admits water pressure to a line of  $\frac{1}{2}$ -in. pipe running to an actuator at B, which operates a damper in the chimney flue. A second controller at C admits water pressure to an actuator or damper motor at D, which operates louvre dampers in the discharge of the fan at E. This same controller C admits water pressure to the diaphragm or piston valve F, which controls the admission of steam to the engine and slows down the engine driving the fan at the same time that the fan outlet is throttled. By controlling the speed of the fan a considerable economy in steam for driving is effected. The chimney flue damper B is arranged to open a trifle earlier and close a trifle later than the fan dampers, to avoid the possibility of any gas being forced out through the fire doors by the operation of the blast fan. The air is carried from the blast fan through a brick conduit under the bridge walls to each separate furnace. Each outlet has an independent hand operated damper to compensate for any differences in resistance of flues and air passages between the different boilers. For instance, the draft induced by the chimney in the uptake of the nearest boiler might be 0.3 in. and in the one farthest away but 0.1 in. In the same way the pressure from the fan might vary from boiler to boiler, but all these differences can be adjusted by the independent dampers in the ash pits, which also provide for working any one boiler heavier or lighter than the others if desired.

The automatic draft control in this plant was put in under a guarantee to hold the steam pressure within a variation of not more than 2 lb. and to give the highest

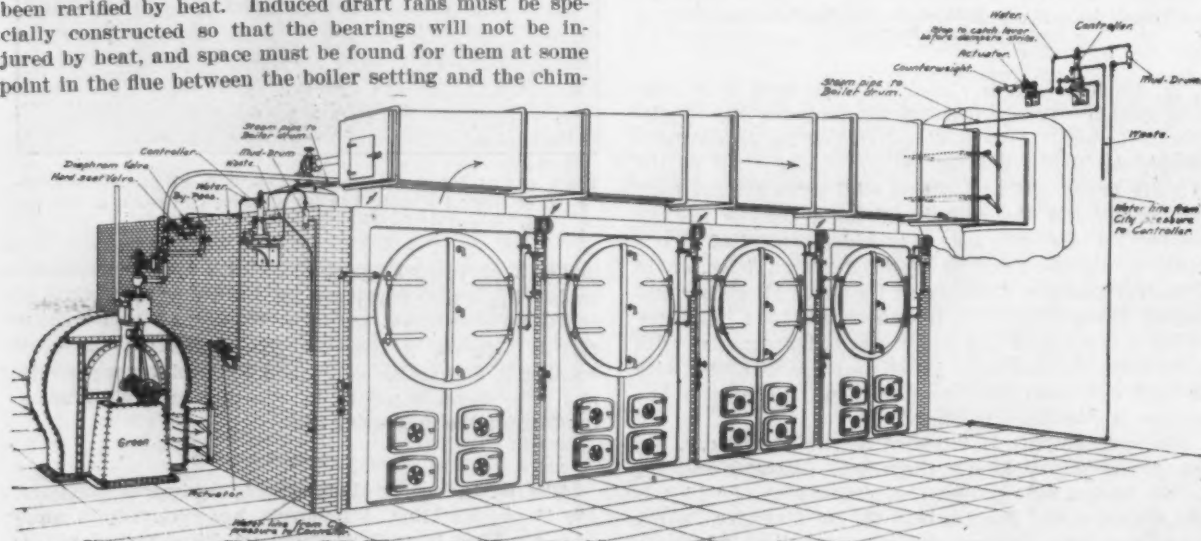


Fig. 2.—Sketch of a Typical Automatically Controlled Furnace Draft Equipment as Installed by the Green Fuel Economizer Company, Matteawan, N. Y.

economy with inferior grades of anthracite coal by preventing leakage through brick work and fire doors, and by using the minimum amount of air for combustion. The chart, Fig. 4, from a recording steam gauge, shows the steady steam pressure maintained during 24 hr., half of the time with hard coal and the remainder with soft. As will be noticed, the only marked variations of pressure occurred when the fires and ash pits were cleaned.

Similar equipments to the one just described have been installed for the Clark Thread Mills, Newark, N. J., the Rockland Print Company and others.

The general subject of mechanical draft control is of greater interest because of attempts which are being made to increase the steaming capacity of boilers. From

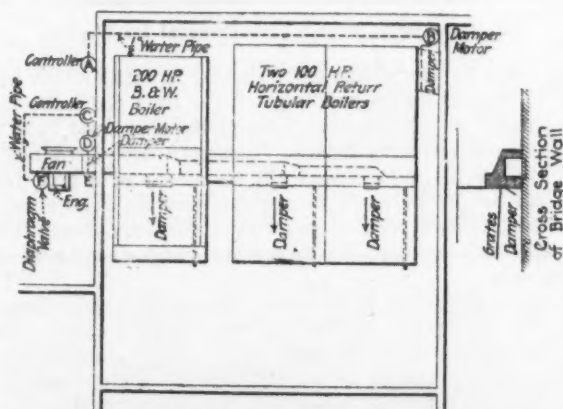


Fig. 3.—Plan of the Complete Equipment in the Atlantic City Sewerage Company's Plant.

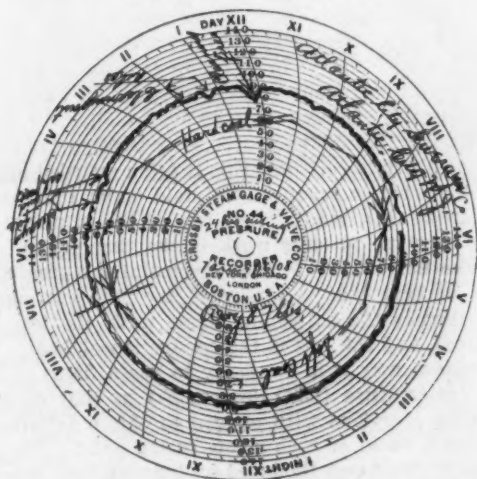


Fig. 4.—Recording Pressure Gauge Chart Showing Uniform Steam Pressure Maintained.

experiments which have been made by the engineers of the United States Geological Survey, it appears that with suitable arrangements the steaming capacity of a boiler can be increased 50 per cent., or even doubled, and that by rebaffling and otherwise redesigning boilers and furnaces, still greater outputs can be secured from a given amount of floor space and evaporating surface without any sensible diminution in the evaporative efficiency of the boiler. In a recent bulletin issued by the Survey, it is stated that "the experiments so far made seem to indicate that it is possible to double or treble the capacity of a plant without making any radical changes in the furnaces and boilers. These increases require about double and treble the quantities of air to be put through the fuel beds and boilers."

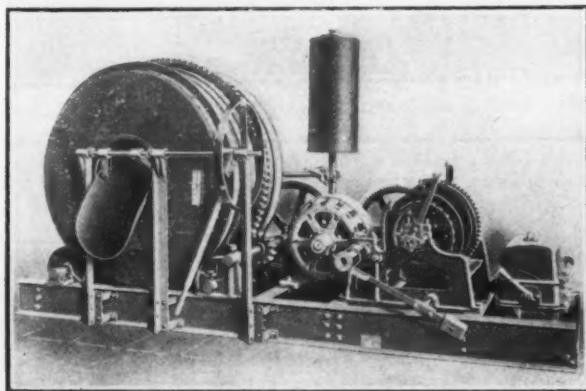
The Executive Committee of the Museum of Safety and Sanitation, 29 West Thirty-ninth street, New York, has detailed Dr. William H. Tolman, the director, for field work, and he will start May 1 on a lecturing tour. Chambers of Commerce, manufacturers' associations, engineering, insurance and architectural societies, railroad and other clubs may avail themselves of this illustrated exposition of devices and methods for reducing damage suits and preserving efficiency, for the cost of the lantern

operator, which is \$10, if not too far removed from the itinerary.

### Record Performance of a Motor-Driven Ransome Concrete Mixer.

One of the most noteworthy reinforced concrete buildings in the West is that being built for the Sacramento Hotel Company, Sacramento, Cal. Sellon & Hemmings designed the building, and the Ransome Concrete Company, San Francisco, is the general contractor. The structure covers a lot 140 x 160 ft., and consists of basement, first and mezzanine floors, and three floors for guests' rooms.

The concrete mixer and hoisting machine used were designed by C. G. Meyers of Norman B. Livermore & Co., San Francisco, Cal. As shown in the accompanying engraving, the concrete machine consists of a combination Ransome mixer, mounted on a 10-in. steel I-beam frame. On the end opposite the mixer is mounted a Mead-Morrison single drum hoist. Both mixer and hoist are arranged to be driven directly through gearing by a 30-hp. Westinghouse alternating current motor, equipped with an auto-starter. The mixer is provided with a patent water measuring device and a measuring hopper.



A Ransome Motor Driven Concrete Mixer and Hoist.

The hoist is used in operating the concrete hoist bucket. The whole arrangement forms a compact machine, the steel frame giving great stability to the outfit.

The mixer was set up in the basement under the sidewalk and retained there until all the concrete had been deposited in the building. Crushed rock and gravel was brought to the site by teams, and dumped into large material bins, from which it was fed by a belt conveyor to a large charging hopper mounted above the mixer. After mixing the green concrete was hauled by concrete carts to the molds.

That the arrangement as installed was an efficient one, is well demonstrated by a record made September 3, 1908, when 381 cu. yd. of concrete were placed in 8½ hr. This involved the mixing of 315 cu. yd. of rock, 158 cu. yd. of sand and 572 barrels of cement; a total of 551 cu. yd. of loose, dry material which weighed in the aggregate 1,427,000 lb. The addition to this dry material 400 barrels of water brings the actual weight of material handled to 1,547,600 lb. All of this material was mixed on the one mixer, and was hoisted a height of 15 ft. and dumped into a bin fitted with two Ransome concrete bin grates. From here it was distributed to the forms, using 10 concrete carts as carriers. The maximum haul for placing this concrete was 225 ft., the average haul 150 ft. In doing this work but 10 men were used in wheeling the 10 carts, each man handling his cart alone and working the full day, so that the average amount of material placed by each during the day weighed over 75 tons. This record, so far as is known, surpasses any similar record for quantity of concrete placed in one working day in the West, if not in the country, from a mixer of the size mentioned.

Norman B. Livermore & Co. recently secured a contract from the State for two similar concrete mixing and hoisting outfits, to be used in the construction of the new building of the California State Prison at San Quentin.

## Aluminum Casting Repairs.

BY HENRY CAVE.

One of the most important uses of the oxy-acetylene blow-pipe is the welding of aluminum. All other metals are amenable to some form of brazing or soldering. Cast iron could have been considered in the same class as aluminum until a few years ago when ways were found for brazing it more or less satisfactorily. Aluminum joints, however, could not be made that approximated the strength of the metal. Though it has for several years

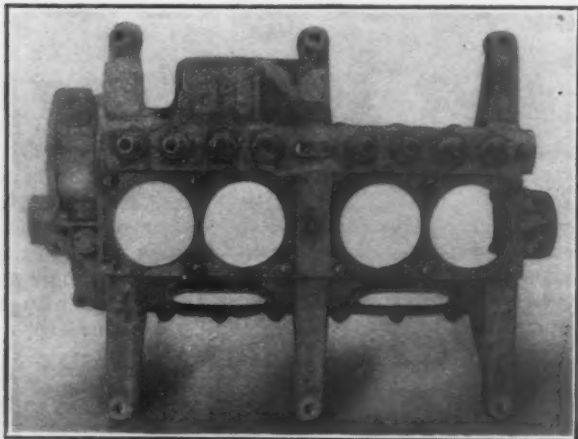


Fig. 1.

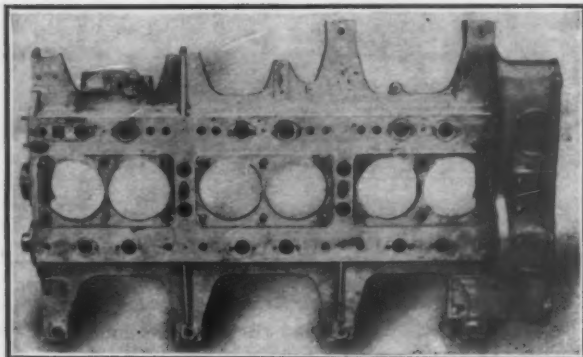


Fig. 2.

Aluminum Castings Repaired with the Oxy-Acetylene Torch Where the Broken Parts Were Entirely Detached.

been possible to solder aluminum, the results are not satisfactory where the joint is subject to strain. Leaks may be stopped, but even this requires considerable skill, and the permanency is always doubtful, owing to the possibility of electrolytic action. The difficulty is the small amount of oxide always present in metallic aluminum which has a tendency to form a layer between the surfaces to be joined.

Even though a neutral flame or one adjusted to contain a surplus of carbon can be obtained with the oxy-acetylene torch, the molten surface of the aluminum be-

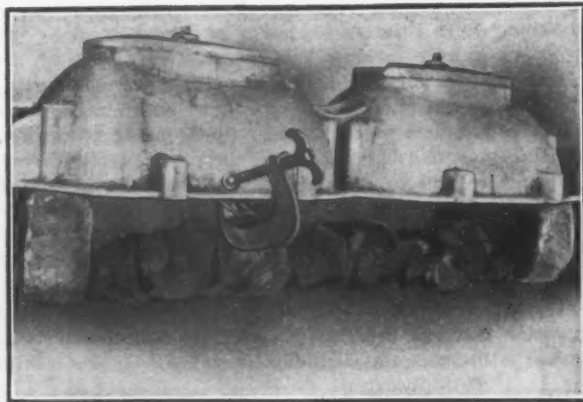


Fig. 3.—A Badly Broken Case Prepared for Welding.

ing fused by this means has a coating of oxide which has to be broken up by puddling with a steel rod, allowing the metal to run together; this produces a weld that is practically recasting locally. Attempts have been made to remove the oxide chemically by means of a flux, but so far as the writer is aware this has not been accomplished, though certain chemicals have been found that are a help and add to the strength and smoothness of the weld.

It is interesting to note that, though the oxy-acetylene welding process originated in France, and is much more extensively used there than here, we are considerably ahead of the French in the art of welding aluminum.

Though aluminum fuses at a comparatively low temperature (1200 degrees F.) its high heat conductivity, which is in the ratio of 31.3 to 11.9 as compared with iron, makes necessary the application of more heat in welding than is required by metals having a much higher melting point. The heat is conducted away from the weld into the surrounding metal to such an extent that when the surface to be welded becomes molten, the metal for a considerable distance around is close to the fusing point and likely to collapse; this is often guarded against by placing what is practically a mold under that part.

It can be seen readily that one of the principal factors in carrying out this work is the time taken. The longer the flame takes to fuse the metal the greater the amount of heat that is conducted into the surrounding parts, whereas the hotter the flame used, the less time is required, and the less is the conduction of heat. This is the reason why it is necessary to use a flame of such a high temperature (6300 degrees F.) as that produced by burning acetylene with oxygen to obtain satisfactory results on a metal of such a low fusing point. The temperature of the flame produced by burning coal gas with air is ample to fuse aluminum, but the whole piece would be heated up to such an extent that it could not support its own weight.

Another advantage of confining the heat to as small a space as possible by reducing the time for conduction of heat, is that the expansion and chance of the part cracking due to the shrinkage of the metal in cooling is considerably reduced. The chance of cracking can be realized when it is known that the shrinkage of alum-

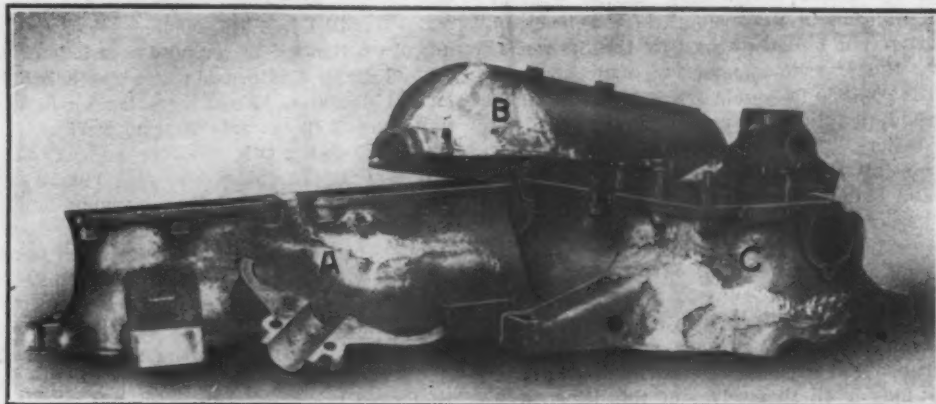


Fig. 4.—Three Cases Repaired by Autogenous Welding.

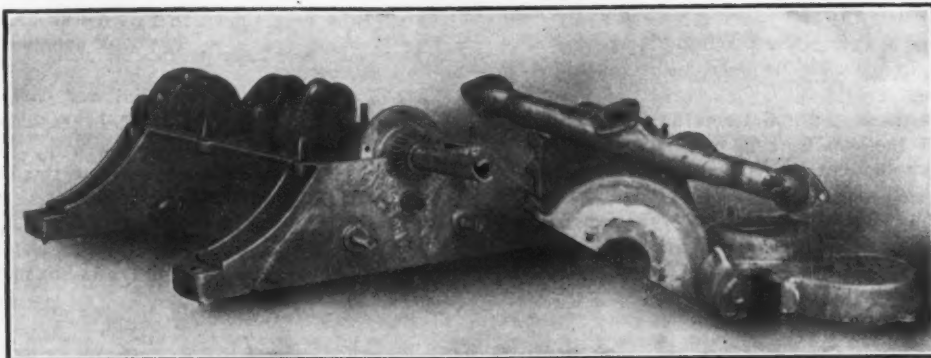


Fig. 5.—Upper and Lower Halves of a Repaired Crank Case.

inum in cooling, from the point of fusion to atmospheric temperature, is 3-16 in. per foot. The modulus of elasticity of aluminum as given in text books is 11,500,000 lb. per sq. in. This is a theoretical figure that represents the weight per square inch that would be required to stretch a piece of the material to double its length, if the elasticity remained the same as it is up to the point where it actually ceases and commences to tear the metal apart. Tensile tests of aluminum alloy as used for auto-

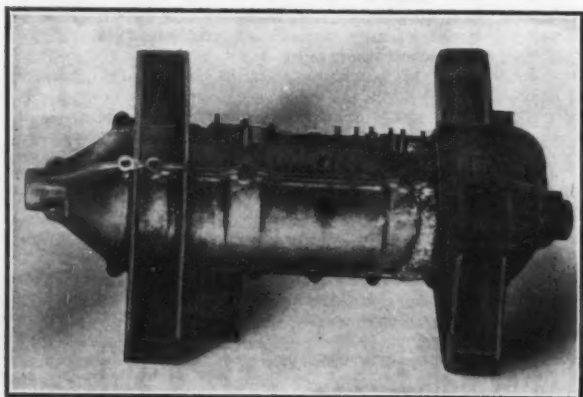


Fig. 6.—Another Crank Case Repair.

mobile parts generally show that the elastic limit and maximum strength practically coincide, the material not having any appreciable elongation, and this elongation is reduced to a vanishing point when the metal is heated to a few hundred degrees.

Taking an example of shrinkage in 2 in., which is no uncommon length to have molten at one time, using the above figures, then the stress produced would be 11,500,000

—, or 718,000 lb. per sq. in., which is far more than any metal could withstand, and if it is not ductile enough to stretch it would certainly pull apart. This

trouble, however, is eliminated in most cases by preheating the part to be welded, uniformly all over, and in this way reducing the extreme difference in temperature, and therefore the contraction between the metal at the weld and the rest of the casting. That is, the parts that otherwise would tend to hold the weld from contracting in cooling will themselves have to contract at the same time as the weld, thus distributing the strain. Obviously preheating is not necessary when a foot or lug is broken off entirely, as there is nothing to restrict the contraction.

Castings having a thin part connected across parallel to a heavy section are practically impossible to weld at present, though it is quite possible that means of doing this may be discovered any time. Due to the different actions of the different alloys now being used, what might prove a failure in one case might be a success with other material. So far the new aluminum alloy, magnalium, which is coming into use, cannot be satisfactorily welded, due to a very heavy oxide forming on the surface, but a flux may be discovered to eliminate this.

As can be seen by the above, the simplest form of weld is where the part is entirely detached; Figs. 1 and 2 illustrate breakages and welds of this nature—and autogenous welding was the only practical, and certainly the cheapest, means of repairing them. The saving in both these cases was particularly pronounced, as the parts were of foreign manufacture. Considerable metal was added so as to insure ample strength.

Fig. 3 shows a badly broken case prepared for welding. The clamp holds a mold in place to prevent the whole thing collapsing; the charcoal is in place ready for preheating. The detached parts lying on the table were also welded on, but not until after the main weld and preheated casting were cooled off.

Fig. 4 shows three cases which had a total of 7 ft. of welding carried out on them. The end bearing was broken off of casting A as shown, and the crack extended three-fourths around the cylinder seat. The end bearing was also welded on casting B, the crack running over the top of the casting. Casting C was broken in a simi-

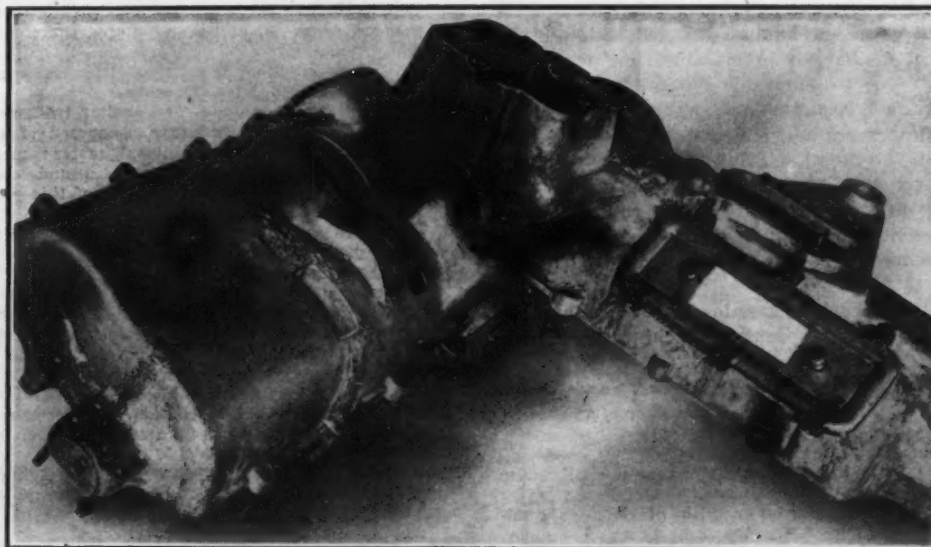


Fig. 7.—Upper and Lower Parts of a Transmission Case Which Was Welded in Fourteen Places.

lar manner to A, but the end bearing was so badly damaged that it was not worth replacing. A casting was, therefore, made and welded in place, being machined up afterward.

Fig. 5 shows the upper and lower halves of a crank case which had the end bearing and flange welded in place and also sundry cracks repaired. The breaking of the bearing caused the crank shaft to part through a crank pin. This was also satisfactorily welded. The flange was welded on the inlet manifold, and the timing gear case was sawed in two to facilitate assembling, four lugs being welded on to bolt it together.

The crank case shown in Fig. 6 was broken within 2 in. of severing the part, and was repaired in a satisfactory manner.

Fig. 7 shows the upper and lower parts of a transmission case which were welded in 14 different places, including a lug welded on at A. Even though these parts were so badly damaged, the cost of the work made a considerable saving over a new case.

The work shown in the above illustrations was carried out by the Autogenous Welding Equipment Company, Springfield, Mass., with Davis-Bournonville equipment.

## A NEW TARIFF FOR THE PHILIPPINES.

### To Take Effect Simultaneously With the Payne Law.

WASHINGTON, D. C., April 20, 1909.—A bill providing a new tariff on products imported into the Philippine Islands has been introduced in the House of Representatives by Chairman Payne of the Ways and Means Committee at the request of President Taft, under whose direction the measure has been prepared as a revision of the tariff act of March 3, 1905, as amended by the act of February 26, 1906. It is believed that the bill will be passed by both Houses during the special session, and it is the hope of its framers that it will take effect simultaneously with the new United States tariff measure now pending in the Senate.

The necessity for the revision of the Philippine tariff is due in some degree to the development of the industries of the islands during the past four years, but more especially to the revenue requirements of the Philippine treasury, serious inroads upon which will undoubtedly be made by the clause in the United States Tariff bill granting reciprocal free trade between this country and the Philippines with limitations upon the free imports of Philippine sugar and tobacco. The customs revenue of the Philippines under the existing law is approximately \$8,500,000, of which a loss of about \$2,500,000 will probably be caused by the placing on the free list of all American products. As a partial offset, the bill providing for the revision of the Philippine tariff makes numerous changes in the rates on foreign merchandise imported into the archipelago, from which it is calculated that an additional sum of about \$1,000,000 will be obtained. The remainder of the deficit is expected to be made up from increased internal taxation.

While the average ad valorem of the act of 1905 is slightly increased by the new Philippine Tariff bill, in several of the more important schedules, there has been a substantial reduction. This is notably true of the metal schedule, but the rates imposed by the new bill on foreign merchandise are still high enough to give American producers a great advantage over all competitors. Owing to sweeping changes in classification, it is not practicable to present a comparable statement of the proposed tariff and the existing law. It will perhaps be sufficient for manufacturers and exporters to bear in mind that the rates in the metal schedule of the new bill are considerably lower than those of the present law; that they apply only to imports from foreign countries and that they represent the margin which American goods will enjoy in competition with similar foreign merchandise.

The schedules covering metals and manufactures thereof and instruments, apparatus, machinery, vehicles, boats, &c., are as follows:

#### Class III.—Metals and Manufactures Thereof.

##### Group 1.—Gold, Silver and Platinum; Alloys Thereof; Gold and Silver Plated Articles.

##### 25. Gold; platinum; alloys thereof:

- (a) In jewelry; plate and goldsmiths' wares not otherwise provided for, hectog., \$12.50.
- (b) The same, set with pearls or with precious or semiprecious stones, hectog., \$25.
- (c) The same, set with doublets, or with imitations of pearls, or of precious or semiprecious stones, hectog., \$17.50.

- (d) Articles or manufactures of gold or platinum (except jewelry), composed in part of other materials, in which the component material of chief value is gold or platinum, not otherwise provided for; pellets for use in dentistry; solder and foil; hectog., \$3.

Provided, That no article classified under this paragraph shall pay a less rate of duty than 25 per centum ad valorem.

##### 26. Silver; alloys thereof:

- (a) In jewelry; plate and silversmiths' wares not otherwise provided for; hectog., \$1.
- (b) The same, set with pearls or with precious or semiprecious stones, hectog., \$5.
- (c) The same, set with doublets, or with imitations of pearls, or of precious or semiprecious stones, hectog., \$5.
- (d) Articles or manufactures of silver (except jewelry), composed in part of other materials, in which the component material of chief value is silver, not otherwise provided for; solder and foil; hectog., 40 cents.

Provided, That no article classified under this paragraph shall pay a less rate of duty than 25 per centum ad valorem.

##### 27. Gold and silver plated wares:

- (a) In jewelry, kilo., \$2.40.
- (b) In lamps not otherwise provided for; picture frames; knives, forks and spoons; carriage and coffin fittings; saddlery hardware; foil; kilo., 60 cents.
- (c) Not otherwise provided for; kilo., \$2.

Provided, That no article classified under this paragraph shall pay a less rate of duty than 25 per centum ad valorem.

##### Group 2.—Cast Iron.

Note.—Malleable cast iron and manufactures thereof shall be dutiable as wrought iron.

##### 28. Articles of cast iron, painted or not, but not otherwise coated or ornamented, neither polished nor turned, gross weight:

- (a) Bars, beams, plates, grates for furnaces, columns and pipes, 100 kilos, 35 cents.
- (b) Other, 100 kilos, 75 cents.

##### 29. Other articles of cast iron (except those covered or coated with gold or silver), 15 per centum ad valorem.

##### Group 3.—Wrought Iron and Steel.

##### 30. Wrought iron and steel:

- (a) In rails, straight or bent, weighing 10 kilos or less per lineal meter; crossings and similar track sections, switch rails and portable tramways, composed of rails weighing 10 kilos or less per lineal meter; metal cross-ties, switches, tongues, frogs, fish-plates and chairs, therefor; 30 per centum ad valorem.

- (b) In rails weighing more than 10 kilos per lineal meter, gross weight, 100 kilos, 35 cents.

Note.—Bent rails, crossings and similar track sections, switch rails, and portable tramways, composed of rails weighing more than 10 kilos per lineal meter; metal cross-ties, switches, tongues, frogs, fish-plates and chairs therefor, shall be classified under clause (b) of this paragraph, with a surtax of 30 per centum.

- (c) In bars or beams (except of crucible steel), neither cut to measure, perforated nor riveted or otherwise fastened together; rods, tires and hoops; gross weight, 100 kilos, 40 cents.

Provided, That bars or rods not exceeding 15 mm. in diameter, and steel known as "bamboo steel," classified under clause (c) of this paragraph, shall not pay a less rate of duty than 15 per centum ad valorem.

- (d) The same, of crucible steel, gross weight 100 kilos, \$2.65. Provided, That no article classified under clause (d) of this paragraph shall pay a less rate of duty than 15 per centum ad valorem.

##### 31. Wrought iron or steel in sheets, gross weight:

- (a) Plain and unpolished, 100 kilos, 50 cents.
- (b) Polished, corrugated, perforated or cold rolled, galvanized or not; hoop iron; 100-kilos, \$1.

Provided, That any of the articles or materials classified under this clause made up in hoops, ridgings, eaves, drain

- pipes, gutters, ceilings, shingles, ceiling centers, borders, friezes, dados, and similar articles, shall be dutiable at the rate herein provided, with a surtax of 100 per centum.
- (c) Tinned;terne plate; tin plate; 100 kilos, \$1.20.
32. Wrought iron or steel, in pieces, in the rough, gross weight:
- (a) Neither polished, turned nor adjusted, 100 kilos, 65 cents.
- (b) Rough-turned or lathed, but neither polished nor adjusted, 100 kilos, \$1.
33. Wrought iron or steel, in pieces, finished, gross weight:
- (a) Wheels weighing each more than 100 kilos; axles, springs, brake shoes, drawbars, brake beams, bumpers, couplings, lubricating boxes, and similar articles for railways and tramways; 100 kilos, 45 cents.
- (b) Wheels weighing each 100 kilos or less; axles and springs for vehicles, not otherwise provided for; 100 kilos, \$1.05.
34. Wrought iron or steel in large pieces, composed of bars, beams or sheets, for structural purposes, perforated or cut to measure, fastened together or not, gross weight, 100 kilos, \$1.25.
35. Wrought iron or steel pipes, gross weight:
- (a) Plain, painted, tarred or galvanized, 100 kilos, \$1.10.
- (b) Other (except those coated or covered with gold or silver), 100 kilos, \$1.50.
36. Wrought iron or steel wire:
- (a) More than 1 mm. in diameter, plain, galvanized or coppered; wire cable and ropes; barbed wire, 10 per centum ad valorem.
- (b) One mm. or less in diameter, plain, galvanized or coppered; wire netting; 15 per centum ad valorem.
- (c) Other, including those covered with textiles, 25 per centum ad valorem.
- (d) Gauze, cloths and screenings, in the piece, 20 per centum ad valorem.
- (e) In other manufactures (except those covered or coated with gold or silver), not otherwise provided for, 25 per centum ad valorem.
37. Wrought iron or steel chains, in the piece or otherwise (except in trinkets or jewelry):
- (a) Exceeding 5 mm. in diameter, 10 per centum ad valorem.
- (b) Other, plain, painted or galvanized, 15 per centum ad valorem.
- (c) The same, covered or coated with other metals (except gold or silver), 25 per centum ad valorem.
38. Anvils, 10 per centum ad valorem.
39. Nuts, bolts, rivets and washers, 100 kilos, \$2.
40. Nails, clasp nails and staples, 10 per centum ad valorem.
41. Screws, tacks and brads, 15 per centum ad valorem.
42. Saddlery hardware (except chains and buckles), plain, or covered or coated with other metals or materials (except gold or silver), 15 per centum ad valorem.
43. Buckles (except trinkets or ornaments, or covered or coated with gold or silver), 15 per centum ad valorem.
44. Cutlery:
- (a) Butchers', shoemakers', saddlers', plumbers', painters', pruning, budding, kitchen, bread and cheese knives; table knives and forks, with handles of common wood, or of iron, japanned or not, not covered or coated with other metals; common scissors or shears, plain, glazed or japanned; grass, garden, hedge, pruning and sheep shears; fishhooks; 20 per centum ad valorem.
- (b) Pocket cutlery; hunting and sheath knives; side arms (not fire) and parts therefor; razors, other cutlery, including scissors and shears not otherwise provided for (except those covered or coated with gold or silver); 30 per centum ad valorem.
- (c) Sword canes and similar articles and weapons with concealed blades, 80 per centum ad valorem.
45. Firearms of all kinds and detached parts therefor, 40 per centum ad valorem.
46. Manufactures of terne plate or tin plate:
- (a) In articles not otherwise provided for, plain, painted, varnished or japanned, 15 per centum ad valorem.
- (b) The same, including vehicle lamps, covered, coated or combined with other metals or materials (except gold or silver), 20 per centum ad valorem.
- (c) Vehicle lamps, covered or coated to any extent with gold or silver, in which the component material of chief value is tin plate, 25 per centum ad valorem.
47. Manufactures not otherwise provided for, in which wrought iron or steel is the component material of chief value:
- (a) Plain, painted, varnished or japanned, or covered or coated with lead, tin or zinc, 15 per centum ad valorem.
- (b) Other (except those covered or coated with gold or silver), 20 per centum ad valorem.
- Group 4.—Copper and Alloys Thereof.*
48. Copper; alloys thereof; in bars, pipes and sheets; alloys of copper in lumps and ingots (except Muntz metal); 10 per centum ad valorem.
49. Copper; alloys thereof: in wire:
- (a) Plain, 15 per centum ad valorem.
- (b) Blanched, gilt or nicked, 25 per centum ad valorem.
- (c) Covered with textiles, not otherwise provided for, or with insulating materials; cables for conducting electricity; trolley wire; 10 per centum ad valorem.
- (d) Covered with silk, not otherwise provided for, 25 per centum ad valorem.
- (e) Gauze, cloths and screenings, in the piece, 20 per centum ad valorem.
- (f) Manufactures not otherwise provided for, in which wire of copper or its alloys is the component material of chief

value (except when covered or coated with gold or silver), 25 per centum ad valorem.

50. Manufactures not otherwise provided for, in which copper or alloys thereof is the component material of chief value:

- (a) Plain, polished, varnished, painted, tinned or japanned, 20 per centum ad valorem.
- (b) Other (except those covered or coated with gold or silver), 25 per centum ad valorem.

*Group 5.—Other Metals and Alloys Thereof.*

51. Mercury, gross weight, kilo, 10 cents.

52. Nickel, aluminum, and alloys thereof:

- (a) In bars, sheets, pipes and wire, 15 per centum ad valorem.
- (b) In articles not otherwise provided for, 25 per centum ad valorem.

53. Tin and alloys thereof:

- (a) In bars, sheets, pipes and wire; in thin leaves (tin foil); alloys in lumps or ingots; 10 per centum ad valorem.
- (b) In articles not otherwise provided for (except those covered or coated with gold or silver), 25 per centum ad valorem.

54. Zinc, lead, and metals not otherwise provided for; alloys thereof:

- (a) In bars, sheets, pipes, wire and type; sanitary traps, and other plain articles bearing evident signs of being for sanitary construction; alloys in lumps or ingots; 10 per centum ad valorem.
- (b) In plain articles not otherwise provided for, 15 per centum ad valorem.
- (c) In articles gilt, nicked or otherwise embellished (except those covered or coated with gold or silver), 25 per centum ad valorem.

**Class XII.—Instruments, Apparatus, Machinery, Vehicles, and Boats.**

*Group 1.—Musical Instruments, Watches and Clocks.*

185. Musical instruments; parts, appurtenances and accessories therefor, including strings and wires; automatic devices for the production of music only; piano stools, metronomes, tuning hammers, tuning forks, pitch pipes, and similar articles for use in connection therewith; not otherwise provided for; 25 per centum ad valorem.

186. Instruments and machines combining other mechanical operations with the production of music, such as slot machines of that character; phonographs, gramophones, graphophones, and similar apparatus; kinesiographs, biographs, cinematographs, magic lanterns, and similar picture-projecting devices, not otherwise provided for; parts, appurtenances, and accessories therefor; 35 per centum ad valorem.

187. Clocks, chronometers, watches, cyclometers, pedometers, odometers, and similar devices; cases, crystals, movements, parts, and accessories therefor; not otherwise provided for; 25 per centum ad valorem.

*Group 2.—Apparatus and Machinery.*

188. Typewriters, mimeographs, Bioncs, and other writing, duplicating, and manifolding machines and devices; adding machines, comtographs, and other computing apparatus; fare registers; detached parts therefor, including ribbons, pads, stencil sheets, mimeograph silks, and similar accessories therefor; stamp pads; 15 per centum ad valorem.

189. Cash registers; detached parts therefor; 25 per centum ad valorem.

190. Sewing machines; detached parts therefor (except needles); 15 per centum ad valorem.

191. Automatic slot machines, not otherwise provided for; detached parts therefor; subject to the provisions of section 6 of this Act; 35 per centum ad valorem.

192. Machinery and apparatus for weighing; detached parts therefor; not otherwise provided for; 20 per centum ad valorem.

193. Electric and electro-technical machinery, apparatus, and appliances:

- (a) Dynamos, generators, generating sets, alternators, motors, and similar machinery, not otherwise provided for; transformers and storage batteries; switchboards and switches; arc lamps, telephone and telegraph instruments; fans, buzzers, and annunciators; ammeters, voltmeters, wattmeters, and similar measuring apparatus; dry and wet batteries, detached parts therefor; and articles used exclusively in the installation thereof; insulators, and insulating compounds and materials used exclusively for electrical purposes; carbon; incandescent bulbs and tubes; 10 per centum ad valorem.

- (b) Cooking and heating apparatus and utensils; chandeliers; desk and table lamps; flatirons; soldering and curling irons; thermo-canteries and cauterizing instruments; surgical, dental, and therapeutic appliances, including so-called electric belts; X-ray machines; vibratory apparatus; electroplating outfits; cigar lighters; other instruments, implements, utensils, and articles used in connection with, for, or by the application or production of electro-technical, thermo-electric, galvanic, or galvanic-magnetic force; detached parts therefor; not otherwise provided for; 20 per centum ad valorem.

194. Machinery and apparatus:

- (a) Of iron, steel, or wood, for use in the crushing, handling, or conveying of sugar cane or its product in or around sugar mills; detached parts therefor; 30 per centum ad valorem.
- (b) Engines, tenders, motors, steam boilers, pumps and ma-

chinery: diving suits; common tools, implements, and apparatus; detached parts thereof; not otherwise provided for; shafting and heating; of iron, steel or wood; 15 per centum ad valorem.

(c) The same, of other materials; emery cloth; 20 per centum ad valorem.

195. Machine belting of whatever material; 10 per centum ad valorem.

196. Fine tools, implements, and instruments, of whatever material, used in the arts, trades, and professions, such as measuring instruments, micrometric gauges, mathematical and drawing instruments, manicure instruments (not pocket cutlery), watchmakers', jewelers', surgeons', dentists', engravers', carvers', glass cutting and similar tools, instruments and implements; detached parts thereof; not otherwise provided for; 20 per centum ad valorem.

#### Group 3.—Vehicles.

197. Wagons and carts for transporting merchandise; ware house trucks; hand carts and wheelbarrows; detached parts thereof, not otherwise provided for; 15 per centum ad valorem.

198. Automobiles:

(a) For the transportation of merchandise, 15 per centum ad valorem.

(b) Other, 20 per centum ad valorem.

(c) Detached parts and accessories for automobiles, including tires, lamps, and horns, 25 per centum ad valorem.

199. Bicycles, velocipedes, and motor cycles; detached parts and accessories thereof, including tires and lamps; 20 per centum ad valorem.

200. Vehicles for use on railways and tramways, and detached parts thereof:

(a) For public or common carriers, 10 per centum ad valorem.

(b) Other, 30 per centum ad valorem.

201. Other wheeled vehicles, including perambulators; aerial machines; balloons; detached parts thereof, not otherwise provided for; 20 per centum ad valorem.

202. Detached wooden parts for any of the articles classified under paragraph 197 or paragraph 201:

(a) Unfinished, 15 per centum ad valorem.

(b) Finished, 20 per centum ad valorem.

#### Group 4.—Boats and Other Water Craft.

203. Boats, launches, lighters, and other water craft, set up or knocked down, imported into the Philippine Islands; cost of repairs made in foreign countries to vessels, or to parts thereof, documented for the Philippine coastwise trade or plying exclusively in Philippine waters, and for which repairs adequate facilities are afforded in the Philippine Islands; 50 per centum ad valorem.

Provided, That upon proof, satisfactory to the Collector of Customs, that adequate facilities are not afforded in the Philippine Islands for such repairs, the same shall be subject to the provisions of paragraph 351 of this act; and

Provided further, That if the owner or master of such vessel shall furnish evidence, satisfactory to the Collector of Customs, that such vessel, while in the regular course of her voyage, was compelled by stress of weather or other casual-

ty to put into a foreign port or place and make such repairs to secure the safety of the vessel or to enable her to return to the Philippine Islands, such duty shall not be imposed; and

Provided further, That furnishings, stores and supplies, not otherwise provided for, purchased abroad, and imported in such vessels, shall be dutiable under the corresponding paragraphs of this Act.

Note.—The expression, "Imported into the Philippine Islands," shall be held to mean, "brought into the jurisdictional waters of the Philippine Islands in or on another vessel, or towed therein by another vessel (except when becalmed or disabled at sea), as distinguished from coming into said islands under the craft's own steam, sail, or other motive power."

#### Free List.

309. Ores, and scoria resulting from the smelting thereof; filings, cuttings, and other wastes, of common metals, resulting from manufacture, and fit only for resmelting; scrap iron, copper, brass, tin, zinc, and lead, and combinations thereof; bell metal; copper regulus; copper matte; cast or malleable iron in pigs; soft or wrought iron in ingots; steel in ingots; tin, lead, zinc, nickel and aluminum, in pigs, lumps, or ingots; Muntz metal.

310. Articles, such as anchors, binnacles, propellers, and the like, the character of which, as imported, prevents their use for other than the construction, equipment, or repair of vessels; life preservers and life buoys.

316. Samples of the kind, in such quantity, and of such dimensions or construction as to render them unsalable or of no appreciable commercial value; models not adapted for practical use.

323. Telegraph cables, of the class known as submarine.

W. L. C.

## The Imperial Chain Hoist.

An exceptionally, safe, durable and efficient chain block is what the Franklin Moore Company, Winsted, Conn., claims to have in its new Imperial hoist. The especial feature that contributes to safety is the suspension of the load shaft direct from the top hook by two steel hangers, which removes the greatest strain from the castings forming the case of the hoist. The use of carefully selected material and equal pains in the manufacture of the block have provided for the quality of durability and the high efficiency, shown by the rapid lifting speed with relatively light pull on the hand chain, has been secured by the arrangement of the parts and the reduction of friction through the provision of the roller bearings on the load shaft. The general appearance of a hoist of 8 tons capacity is shown in Fig. 1. Fig. 2 is a detail of the block of the 1-ton hoist, and Fig.

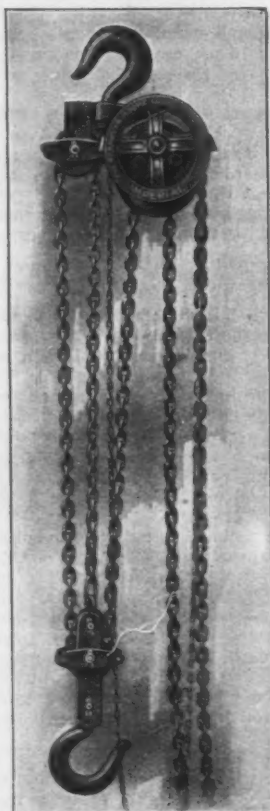


Fig. 1.—An 8-Ton Imperial Hoist.

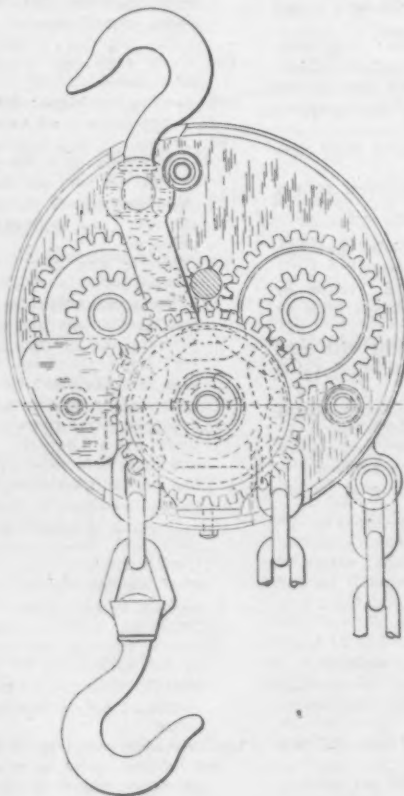
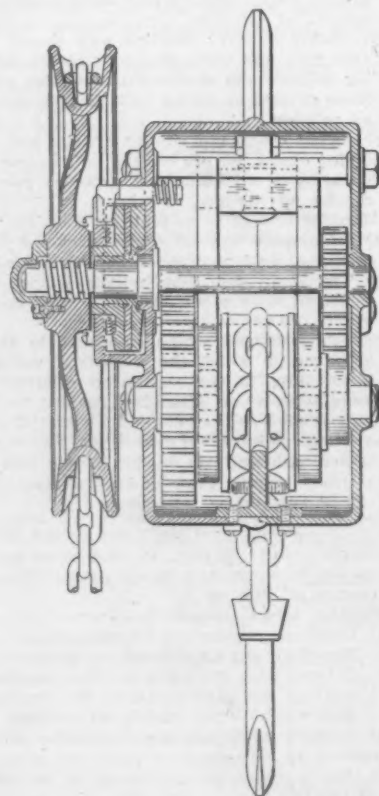


Fig. 3.—Sectional Views of the Imperial Chain Hoist Made by the Franklin Moore Company, Winsted, Conn.



3 gives two sections of the block proper from which the design and operation may be readily understood.

Another special feature of the hoist is the friction drive, which is very quick and positive in its application, and in connection with the ratchet holds the load



Fig. 2.—The Block of a 1-Ton Hoist.

securely at any point. In lowering the load descends rapidly and under absolute control. For their capacity these blocks are very compact and light in weight and require a relatively small amount of head-room. All of the mechanical parts are enclosed in a tight two-part housing, as may be seen in Fig. 3. The gears are all cut from special high carbon drop forged steel blanks. The load shaft is of a special shaft steel of very high torsional strength, and the chains are hand made and carefully tested and fitted to the sprockets. The swinging of the load direct from the point of suspension allows free action of all working parts, which is a large element in the reduction of friction. It is claimed that the friction is less than 5 per cent. in all hoists up to and including 3 tons capacity. Of the entire range of capacities the average mechanical efficiency is 90 per cent.

In Fig. 3 the assemblage of the parts may be seen. The top hook has its shank riveted in a horizontally arranged swivel block, which is trunnioned in the upper ends of the two hangers, between the lower ends of which the load sprocket is placed. Both the load sprocket and the load gear driving it have square holes fitting on squared portions of their shaft. The chain passing over the load sprocket carries the load hook at one end and at the other end is secured to a stud on the side of the casing. The bearings of the load shaft in the steel hangers are of the caged roller type, the rollers being journaled in washers and secured together by spacing studs. At its extreme ends the load shaft has bearings in the two parts of the housing. These are of the ordinary type, as little weight comes upon them. The cup-like halves which form the housing have an interlocking joint which makes up tightly when the binding bolts are tightened. Guides are provided for the load chain to prevent it from getting disengaged from the sprocket, and also to strip it from the sprocket on the unloaded side when the hoist is being raised.

The load sprocket is driven by a pinion on one end of the hand wheel shaft through two intermediate gears, each connected to a smaller pinion, engaging the load gear and symmetrically located so as to divide the thrust. The hand chain wheel is bored with a coarse pitch screw thread engaging a corresponding thread on its shaft. The inner face of its hub bears against the hub of a ratchet disk, having face teeth engaged by a pawl actuated by a spring, so that it tends to force the ratchet disk inward as well as holding it against rotation. Between the ratchet and a friction disk behind it, pinned to the load shaft, is a leather washer forming a friction, which drives the shaft in hoisting and holds the load from running down except when the hand chain wheel is turned in the lowering direction, which has the effect of slightly unscrewing it on its shaft and decreasing the

friction. The ratchet, however, still tends to hold the load, which, if light, can be lowered only by further rotation of the hand chain wheel in the lowering direction. This brings a pocket on the hand wheel hub in contact with a pin on its shaft, and produces a reverse drive against the friction still remaining through the action of the pawl on the ratchet. Ordinarily the descent of the load is by its own weight, and follows the movement of the hand chain as soon as there is sufficient reduction of pressure on the friction.

The hoists are made in sizes of from  $\frac{1}{2}$  to 20 tons capacity. The smallest is regularly made to lift 8 ft. and the largest 12 ft. The minimum distance between the hooks of the smallest hoist is 15 in., and of the largest 58 in. These two extremes in the range of sizes weigh respectively 53 and 1100 lb. and are operated by a hand chain pull of 56 and 155 lb. respectively.

### A Niagara Falls Ice Jam Does Great Damage.

A great ice jam took possession of the Niagara gorge from the Falls of Niagara to Lake Ontario on April 9 and 10. Never before in the history of the gorge has there been such a jam, and never has such extensive damage been done in the Niagara gorge. When the jam was in full vigor there was hardly an open spot other than the Whirlpool Rapids from Niagara to the lake. Even the whirlpool was ice coated from shore to shore. The water and ice rose full 50 ft., and spread out to new heights. The tracks of the Niagara Gorge Railroad were buried for three miles or more under 20 ft. of ice, deposited there at time of highest water. Steel guys of the Lewiston suspension bridge were snapped off by the pressure of the ice that touched their anchorages, placed, as was thought, far out of danger from such cause. The great steel work of the upper arch felt the mighty impact of the ice jam, for the frozen mass pierced the lower parts of the arch over the New York abutment.

The greatest damage was done in the power house of the Ontario Power Company, at the water's edge on the Canadian side. This station was flooded with ice laden water, and it was necessary to shut down the installation. The company states that the damage to the machinery will probably not exceed \$100,000, if as much, exclusive of the high-grade lubricating oil. Some idea can be gained of the magnitude of the works when the fact is realized that under normal conditions about 100 barrels of such lubricating oil are in constant use on the various bearings. The cleaning of the machines began about noon on Saturday and was continued night and day until finished, about 36 hours later. A large force of expert mechanics was necessary in order to do this properly, but when completed the generators will be in the same perfect condition as when they originally came from the factory.

**The American Iron and Steel Institute.**—W. J. Filbert, secretary, has issued a notice stating that the second annual meeting will be held May 3 at 12 o'clock noon, in room 1717, 71 Broadway, New York City. The directors of the institute have concluded that it would be advisable to defer holding the formal annual meeting until some date in the future, at which time it is contemplated an interesting and somewhat extensive programme will be provided. It is, therefore, proposed, unless the members of the institute should otherwise decide, to simply convene the annual meeting on May 3, and at once adjourn until a later date to be fixed, at which adjourned meeting the election of directors and the transaction of such other business as may come before the meeting will be consummated and the programme to be arranged for carried out. Notice will be given to members of the date to which the annual meeting may be adjourned.

A syndicate financed in Great Britain is to be formed to establish near Bombay, India, a plant for the manufacture of wheels, tires, axles and springs for the Indian railroads. The rolling mill is expected to be ready for service in March, 1910. It will be operated entirely by electricity.

# THE IRON AGE

Established in 1855.

New York, Thursday, April 22, 1909.

Entered at the New York Post Office, as Second Class Mail Matter.

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	-	-	-	-	-	HARDWARE EDITOR.

## A Sharply Declining "Balance of Trade."

The decline in the balance of trade in favor of the United States is greatly accentuated in the March returns of foreign commerce. In imports March has the distinction of standing next to the record month of December, 1906. In March of this year shipments into the United States from other countries amounted to \$133,419,297, as against \$134,349,760 in December, 1906. It is remarkable that the high level of expenditure for foreign products reached in the boom of 1906 and 1907 should be exceeded at this time. Whereas in March of last year the excess of merchandise exports over imports was \$52,400,000, the excess for last month was but \$5,783,423. For the nine months ending March 31, 1908, the imports and exports were \$930,754,000 and \$1,498,436,000, respectively, while for the nine months ending March 31, 1909, the respective amounts were \$949,572,000 and \$1,297,005,000. The export balance for the three quarters ending March 31, 1909, has thus fallen short by \$220,000,000 of the excess for the first nine months of the fiscal year 1908.

In the early months of last year the decline in our foreign commerce was referred to as due nearly as much to falling imports as to a decrease in exports. For some months now, however, imports have been increasing in a way that on its face is puzzling, in view of the fact that a tariff bill is pending which is expected in the main to reduce duties. Perhaps if the import figures were closely analyzed their proportions would not be altogether surprising. While the detailed returns for March have not been published, some conclusions may be drawn from the official statistics for January and February. It is evident that the possibility that some articles now on the free list might be made dutiable in the new tariff act, for purposes of revenue, has led to increased importations. Coffee and tea are among such articles. There has been a large increase in imports of unmanufactured rubber, also a free list article. As against \$5,300,027 for January and February, 1908, the imports of rubber in the first two months of this year were valued at \$14,231,476. For the eight months ending with February the total imports of unmanufactured rubber were valued at \$41,298,572, against \$25,075,522 for the first eight months of the fiscal year 1908 and \$41,045,387 for the first eight months of the fiscal year 1907, the very height of the boom period. In view of the addition of hides of cattle to the free list in the Payne bill, it is noteworthy that the imports of dutiable hides in January and February should have amounted to \$4,275,662, as against \$1,674,799 in January and February, 1908.

Greater activity in the leather industry would seem to be indicated by these figures, as well as by the increase in imports of duty free hides from \$4,551,233 in the first two months of last year to \$9,050,780 in January and February, 1909.

In general, the increase in imports on the eve of the passage of a tariff act revising duties downward may be accepted as an indication of improvement in industries whose raw materials are imported—an improvement which requires the bringing in of such materials regardless of any changes that may be made in customs schedules. In that light it gives some reason for encouragement, even though the export comparisons with 1908 continue unfavorable. The continuing low level of consumption abroad precludes any early increase of importance in the outward movement. Something will depend here on the extent of the readjustment of costs of manufacture in the United States to meet the lowered costs of our foreign competitors. So far as the international movement of gold is concerned, the strong position of the United States last year, as the result of an accumulating credit balance, is not likely to be duplicated in many months. In view of the importance attached to the foreign trade balance in other times of recovery from industrial depression, the question may yet assume a significance that of late has not been given to it.

## A German-American Patent Treaty.

The German and American governments are attempting to devise some means by which reciprocal relations between the two countries may be established as to the compulsory working of patents. The matter is as yet in tentative form, but the purpose is to procure for American inventors the same patent rights in Germany as the Germans enjoy in the United States. In other words, the compulsory working clause of the German patent laws would then not apply to Americans so long as the United States should maintain its present very liberal attitude toward the German inventor.

The adoption of the compulsory working principle here would open to American manufacturers the right to procure the annulment of patents issued to foreigners which might be permitted to remain unworked after a specified initial period, or would compel the establishment of branch works here and the sale of shop rights. But the American manufacturer owning foreign patents would still be compelled to establish works in other countries. If the proposed reciprocal agreement with Germany should be established, he would probably consider himself to be getting the best of the bargain. He could do all of his manufacturing at home. It would be an entirely fair arrangement as between two countries. There would be the same degree of equity as if the United States should adopt the compulsory working clause. In the former case neither country would employ the principle toward the inventors of the other. In the latter, both would use it.

It is not to be presumed, however, that Germany would enter into an agreement along reciprocal lines unless the compulsory working principle be adopted here and applied to the inventions of those countries which would not enter into a similar agreement. As things now stand, there would be nothing to gain and a good deal to lose. The retaliatory clause of the tariff bill, discussed in *The Iron Age* of March 25, or the same principle introduced into the patent laws, would be necessary, applying the same rules to patents obtained in the United

States by aliens as are adopted by the country of which they are citizens, in respect to patents issued there to citizens of the United States, which would include compulsory working in almost every case. Or the United States might adopt the compulsory working clause and make exceptions of those countries which would agree to reciprocate. It would seem that negotiations between Germany and the United States, or the United States and some other nation later on, would be complicated by the discrimination that would result against the citizens of the foreign country, for in the German laws, as well as those of Great Britain and other countries which have the compulsory working of patents, no distinction is made in favor of their own people in the liability to forfeiture of patent rights. It has been suggested that Germany might make like exceptions of its own citizens, extending to them the same rights that would be accorded Americans under the agreement. The projected treaty opens a new aspect of the possible solution of the problem. In its consideration, however, the fact should not be overlooked that reciprocity between nations may work to the great advantage of both, but that retaliation, especially when embodying the factor of favoritism, is seldom profitable to either party.

#### **Laws Fail to Curb Business Bribing.**

A few years ago a wave of legislation swept the Eastern States, aiming to put a stop to bribery in the transaction of business. Laws were enacted prescribing penalties both for the giver and the taker of a gratuity in connection with the placing of an order. Even the soliciting or offering of a gift intended to influence a business transaction was made punishable. These laws still stand on the statute books. But, like many other enactments intended to restrain corrupt practices, they were relegated to limbo almost as soon as they received the executive signature. Prosecutions brought under them have been exceedingly few, while, according to the experience of those in position to know intimately of such matters, the evil they were designed to correct has continued. Where there was some interruption while the discussion was fresh in the public mind, the old practice was soon resumed, and other men having influence or authority are stated to have joined the ranks of the bribe takers. Some have been found out and discharged from their employment, but the wholesome example of punishment by fine or imprisonment or both has not been felt. There has been a reluctance to proceed against the malefactors in the courts, and it is a pity that this is the case.

Some business houses are paying more than market prices, or are getting inferior goods or machinery, or what is not best suited for the purpose, because an employee is getting a "rake-off." The question, "What is there in it for me?" may be conveyed in other words, less direct and less dangerous. The salesman learns that it is a case either of not getting the business or of meeting the demands of the person who stands between him and an order. A part of the profit may be sacrificed, or the bribe money may be added to the price. The intrigue may be of a petty character. The good word of a workman may be desirable in introducing something new; or a foreman may be able by direct praise and criticism or by innuendo to increase the chances of the bidder with whom he is in collusion, and to damage the competitor. But the more serious danger lies higher in the works. Some superintendents have been guilty of accepting money or its equivalent in consideration of an order.

Some purchasing agents have been equally culpable. There are business men who deliberately try to corrupt those who they believe can help them in establishments where a rival house has a firm foothold. It is an unpleasant subject to discuss, but the evil exists to a greater extent than would appear possible in the face of the general sentiment on this subject and of statutes that may bring punishment and even ostracism to the offender. Most men in positions of trust are honest, but the minority is a factor that must be taken into account.

So keenly do some buyers feel the existence of corrupt practices that they shun even the most innocent attentions from sellers. The lavish entertainment which once marked the contest for large contracts is dying out. The social side of business intercourse is increasing, but it is coming to be more and more reciprocal. The buyer is the host as well as the seller. The business itself is transacted on merit and price and delivery. Too profuse an expenditure of money puts the buyer on his guard. He realizes that he must pay for it in some way, since it must enter into the cost of the product.

Prosecutions under the corrupt practice acts are needed, but it is doubtful if recourse to the law will be frequent. The employer does not wish to advertise the fact that one of his men has accepted favors of this sort. The salesman does not care to seek out a customer and tell him that an employee is feathering his nest at the employer's expense; nor does the salesman like the notion of going into court and testifying to such facts. But the honest salesman or his house could often do a real service by dropping a timely hint to the employer. Cooperation between honest men is not only proper but highly desirable.

#### **Pig Iron Selling by Steel Companies.**

Some prominence has been given recently to the resumption of one of the Bay View, Wis., blast furnaces of the Illinois Steel Company because of the fact that it is to make foundry iron for sale in the general trade. This is in reality but a return to the old order in the Chicago District, the Bay View furnaces having for years made foundry and malleable Bessemer iron for the market. The great demand for steel products in the Chicago District in the years of prosperity following 1898 made the Bay View furnaces tributary to the steel works at South Chicago. Now that the Gary plant has been started it would seem unlikely that the shipment of cold pig iron from Bay View will again figure in steel making operations in that district. Somewhat similar is the situation regarding the Lebanon Valley furnaces of the Lackawanna Steel Company, which in the high pressure period preceding 1908 shipped their product to the company's steel plant at South Buffalo. Two of these furnaces are now in the merchant list, and the probabilities favor their indefinite continuance in that capacity. The Tennessee Company, whose career represents an evolution from a purely merchant pig iron operation, is still a seller of foundry iron from furnaces so located that their product could not with economy be utilized at the Ensley steel plant. Their continuance in the merchant trade is probable, at least until the steel product of the company assumes a more diversified form.

It is evident that in so far as any of the large steel companies figure as sellers in the pig iron market the condition is either a survival from other years, or is the natural outcome of a change in the company's status. It does not signify, as some published statements would indicate, an invasion of the pig iron field by steel making

interests as a means of supplementing a diminished trade in finished material.

## CORRESPONDENCE.

### Open Hearth Laboratory Practice.

To the Editor:—After reading in *The Iron Age* of April 8 Mr. Danforth's paper on the analysis of open hearth preliminary tests and the criticism by "The Test Boy" in the following issue, I would like to make a few remarks.

On this and former occasions I have seen criticisms appear which I think were harsh, satirical and uncalled for. Criticism of this kind should be condemned, as it accomplishes nothing worth while and may hurt feelings and keep others from writing articles of inquiry or interest.

Mr. Danforth does make certain statements in his article; he gives them as the results of his experience, and this is surely quite proper. On the other hand, "The Test Boy" fails to sign his name or quote any authority for his statements.

Criticism of the right sort is a good thing and should not be objected to. Let us have criticism at all times, but let it be of the right sort.

B. C. PARRETT.

CLEVELAND, OHIO, April 16, 1909.

### A School of Mines Proposed for the University of Illinois.

The Western Society of Engineers, through its president, Andrews Allen, has appointed a committee consisting of A. Bement, F. A. Delano, Blon J. Arnold, John M. Ewen, Isham Randolph and Robert W. Hunt, to draft a memorial for presentation to the State Legislature petitioning for the establishment of a department of mines at the State University of Illinois. Attention is called to the fact that, although second in importance in the country and, on a basis of attendance, ranking fifth among American universities, this institution, representing the second largest coal producing State in the Union, and one whose mineral output exceeds that of its products of agriculture and manufactures, is without a school of mines. Departments of civil, mechanical and electrical engineering have long been maintained by the university, and it also has an agricultural department, which has been of untold value to the agricultural interests; but mining has thus far been neglected, with the result that this great industry has suffered seriously, both in loss of life and destruction of property.

In a paper presented at a recent meeting of the Western Society of Engineers, by A. Bement, on "The Illinois Coal Field," the statement is made that "thus far Illinois has not suffered to the extent that other States have from large mine casualties, because there is only a comparatively small amount of gas generated, although operations of the deep mines in the No. 7 seam in Franklin County have been attended with disastrous results, notwithstanding that only three mines have reached a fair stage of development. The reason therefor is that a larger quantity of gas is given off in these mines, which, together with the reckless disregard of safety that prevails, changes what would otherwise be a good safe field to a very dangerous one, giving promise that if present disregard for safety continues it will distinguish itself by such appalling disasters as have occurred recently in Pennsylvania and West Virginia." The deduction therefore is that the interests of the people in general, as well as of those engaged in the mining business, require a higher degree of skill in the conduct of this industry.

**The Cleveland Manufacturers' Club.**—At the annual meeting of the Cleveland Manufacturers' Club, Cleveland, Ohio, held April 17, the following were elected to the Board of Control: M. F. Barrett, Cleveland Bronze & Brass Company; D. R. Davis, Acme Machinery Company; W. W. Hayward, Cleveland City Forge & Iron

Company; W. D. Sayle, Cleveland Punch & Shear Works Company; W. A. Comstock, Cleveland Wire Spring Company; W. F. Billenstein, National Iron & Wire Company; C. F. Kurz, Cleveland Stove Fixture Company; W. W. Rankin, Billings-Chapin Company, and C. H. Foster, Gabriel Horn Mfg. Company. The board elected the following officers: President, W. A. Comstock; first vice-president, W. D. Sayle; second vice-president, W. F. Billenstein; treasurer, D. R. Davis; secretary, J. W. Campbell. The club now has a membership of 125.

### Germany's Inland Waterways.

Consul Robert J. Thompson, Hanover, Germany, furnishes the following information as printed in the *Daily Consular and Trade Reports* of the Department of Commerce and Labor:

During the past 20 years Germany has expended \$150,000,000 on its waterways, and it has now in navigable rivers, canalized rivers and inland canals over 8278 miles of navigable waterways. The German-Austrian and the Rhine-Elbe canals, already begun, contemplate the expenditure of nearly \$350,000,000.

The mileage of the inland waterways of Germany, if possessed by the United States in proportion to our area as compared with that of Germany, would be equivalent in lineal measurement to 40 parallel waterways east and west from the Atlantic to the Pacific, and 20 parallel waterways north and south from Canada to the Gulf; and that would mean a network of canals for a State like Ohio, say, running east and west and north and south, which would be something like 40 miles apart from boundary to boundary in all four directions. With this in view the importance of Germany's waterways may be properly appreciated by the American student of this subject.

### Proposed Industrial Legislation in Missouri.

At the coming session of the Missouri Legislature some bills adverse to the interests of manufacturers are to be introduced. The Missouri Manufacturers' Association opposes the following:

Senate Bill No. 1.—Seeks to impose a fine of \$500 for the employment of more than 10 per cent. of noncitizens.

Senate Bill No. 29.—Limits the employment of females to 54 hr. a week.

House Bill No. 29.—Provides a penalty for the discharge of an employee on account of his membership in a labor organization.

House Bills 167 and 168.—Provide for the labeling of paint packages; the first requiring the formula, the second requiring a poison label on paints containing white lead.

House Bill No. 797.—Would compel employers to post schedules and furnish employees with a copy of the amount of work to their credit each day.

House Bill No. 819.—Drawn to regulate the issuance of restraining orders and injunctions and procedure thereon, and seeks to limit the meaning of "conspiracy."

The Manufacturers' Association recommends this bill:

House Bill No. 1023.—Provides a salary system of payment for factory inspectors.

**Steel Corporation Bond Issue.**—The publication this week of a newspaper article to the effect that bonds may be issued by the United States Steel Corporation to supply funds for the completion of the programme of new construction now under way at Gary, Ind., and elsewhere brought from Chairman E. H. Gary the statement that the question had not been considered by the directors. The same article contained the statement, which is understood to be correct, that since the beginning of this year, \$4,058,000 of treasury bonds of the Duluth, Missabe & Northern Railway Company have been sold. In addition to this amount the last annual report of the Steel Corporation showed \$7,863,000 of treasury bonds of various subsidiaries, which are subject to sale.

## Trade Publications.

**Machine Tools.**—Hill, Clarke & Co., Chicago. Three leaflets. Describe three sets of equipment of the Universal (horizontal) boring machine, known as outfits A, B and C.

**Hay Presses and Plows.**—Collins Plow Company, Quincy, Ill. Catalogues and leaflets. Relate to an extensive line of hay presses and plows made for both domestic and export trade. The hay press catalogue is printed in English and Spanish, and is profusely illustrated with colored plates and halftone engravings.

**Conveying, Transmission and Screening Machinery.**—Stephens-Adams Mfg. Company, Aurora, Ill. Catalogue No. 12; 6 x 9 in.; 672 pages; bound in cloth. Describes in detail a large variety of transmission machinery and equipment. Halftone views and line drawings of machines and machinery parts convey a clear idea of their construction, and views showing a great variety of installations indicate the wide range of application. Besides price-lists applying to standard equipment, the book contains much mechanical information, relating to the adaptation of transmission systems to various kinds of work. Many useful tables are given, including those of standard iron gauges, weights of sheet iron, weights of iron and steel bars and shapes, lumber and other materials, metric conversion tables and other information of interest to builders generally. Several pages are also devoted to freight classification and rates. The weights of machinery in the catalogue being furnished, the freight charges on any shipment can be thus ascertained with reasonable accuracy.

**Phosphor Bronze.**—The Phosphor Bronze Smelting Company, Ltd., 2200 Washington avenue, Philadelphia, Pa. Booklet, 3½ x 6 in., 24 pages. Gives general description of mixtures used and advantages of phosphor bronze. The different grades are also designated and described. In bearing metals, many different grades for a variety of uses are listed. Rods, both rolled and drawn and wire, are also listed. Wire-ropes and sheets of this material are also referred to, and a table giving the weight of bars and plates is appended.

**Mechanical Oilers.**—Pedersen Mfg. Company, 636 First avenue, New York. Circular. Shows the application of the Pedersen mechanical oiler to a gas engine, and brings out the fact that the feed pipes to the bearings lead over a point higher than the sight feeds, proving that the oil is forced after passing through the sight feeds. This oiler is adaptable to any machinery where mechanical oil feed is advantageous.

**Blowers.**—American Blower Company, Detroit, Mich. Catalogue, 7 x 8½ in., 24 pages. Shows principally the Sirocco blowers, recently made by the Sirocco Engineering Company and now consolidated with the American Blower Company. Several types of the Sirocco centrifugal fans are shown, and it is explained that they can be direct connected to any make of steam turbines for any blower service. A number of installations are illustrated and some space is devoted to showing the standard types of American blower equipment, including a view of an ideal A B C heating and ventilating system and some A B C vertical inclosed self-oiling automatic engines.

**Tie Plates and Angle Bars.**—Sellers Mfg. Company, Western Union Building, Chicago, Ill. Booklet. A tie plate which has corrugations at the bottom which sink into the top fibers of railroad ties to afford a firm grip is shown, and brief mention is made of the company's line of angle bars.

**Deep Hole Drilling and Rifling Machines.**—Pratt & Whitney Company, Hartford, Conn. Catalogue, 9 x 12 in.; 24 pages. Describes a line of machines used extensively in gun boring, but which are adaptable for use in other lines of manufacture. Belt driven and motor driven gun barrel machines are shown, together with a gun barrel drill grinding machine, tube and gun barrel smooth reaming machine, and tube and gun barrel lapping machines. Rifling machines and parts are illustrated, and the last page of the catalogue contains cuts of metal working machine tools without descriptive matter beyond the names and sizes of the machines shown. The catalogue is standard in size with a number of other catalogues recently published by the associate branches of the Niles-Bement-Pond Company.

**Stokers.**—American Ship Windlass Company, Providence, R. I. Sales agent, Lenher Engineering Company, Singer Tower, New York. Catalogue, 6¼ x 9¼ in.; 39 pages. The Taylor gravity underfeed stoker, which is an inclined underfeed machine in which green or uncoked fuel is fed under burning fuel, is illustrated with the aid of photographic views and diagrams. The entire fuel bed of the apparatus is moved by gravity down an incline in such a manner as to rid itself of ashes and clinkers, while the air necessary to supply combustion is applied under pressure at a period between the coking and igniting of the fuel. Several installations of the stoker are shown and some diagrams illustrate the application to a number of makes of boilers.

**Flexible Shafts and Flexible Shaft Machinery.**—Chicago Flexible Shaft Company, La Salle avenue and Ontario street, Chicago, Ill. Catalogue No. 28, 6 x 9 in.; 23 pages. A wire wound flexible shaft, which is made in standard lengths

up to 8 ft. and can be made in special lengths to order, is shown, together with a link shaft, and numerous machines adaptable for use with flexible shafts are illustrated, particularly several types of drilling machines, grinding and polishing equipment, woodworking machinery and a stove polishing machine to which particular attention is called. Power is transmitted through the shaft to a brush which revolves at high speed, and the apparatus is particularly useful in preparing stoves for display purposes.

**Valves.**—Crosby Steam Gauge & Valve Company, Boston, Mass. Folder. Shows the Crosby standard pop safety valve for boilers and the Crosby inspection valve, which is similar in construction to the standard valve but is made heavier for high pressure service.

## The Sirocco Blower Inventor.

Of more than passing interest, because of the recently announced consolidation of the Sirocco Engineering Company with the American Blower Company, is the career of S. C. Davidson, the inventor of the Sirocco blower. He was born in County Down, Ireland, in 1846, and was educated at the Royal Academical Institution, Belfast. His tastes from early childhood ran in mechanical lines, and on leaving school, at the age of 15, he entered the office of William Hastings, a Belfast civil engineer, where he acquired a good knowledge of surveying, architecture and engineering.

During 1864 his father purchased an interest in a tea estate in India, and believing his son would have better prospects of advancement in life as a tea grower sent him there in the autumn of that year. The estate was 300 miles northeast of Calcutta. Upon arrival he acted as assistant manager for two years and then became manager. After his father's death, in 1869, he bought out the co-partners and became sole proprietor. He had not been long on the tea estate before he recognized the possibility of improvement in the existing primitive and by no means cleanly systems, and turned his mind to the invention of mechanical means for the manufacture of the leaf. It was a matter of much difficulty and required continued perseverance to overcome the conservative prejudice of the planting community generally against the use of anything mechanical to replace the hand and foot methods, which had been established by the Chinese experience of centuries. As the teas from the Davidson estate brought best market prices the prejudice gradually gave way. In 1874 Mr. Davidson sold his property, returned to Belfast and for some years superintended the manufacture by Comb, Barbour & Comb of his patented tea machinery.

In 1881 he started the Sirocco Engineering Works at Belfast, where at present there are engaged about 500 hands in the production of Sirocco tea machinery and Sirocco centrifugal blowers and exhaust fans. The business was converted into a private limited liability company in 1898, under the name of Davidson & Co., Ltd., of which Mr. Davidson is chairman and managing director. The Sirocco Works at Belfast is unique in the respect that nothing else is manufactured but the personal inventions of Mr. Davidson. Originally his experiments in the constructing of fans were undertaken with a view to improve the ordinary type of centrifugal fan, which he employed in connection with his Sirocco tea dryers, and his investigations resulted in the production of an entirely new type of fan in which the hitherto accepted principles have been reversed in almost every detail.

Mr. Davidson was granted patents in the United States covering broadly the principle and construction of his Sirocco blowers in 1900. In 1903 they were introduced on the American market by the Sirocco Engineering Company, New York, in which Mr. Davidson interested himself, and a factory was started shortly afterward in Troy, N. Y. By the recent consolidation and incorporation of the American Blower Company under the laws of the State of New York, Mr. Davidson became financially interested in the American Blower Company, now a leading interest in the blower business of the world. In Mr. Davidson is found a rare combination of inventive genius and good business capacity. He is full of energy, is a genial companion and considerate em-

player and a lover of athletic sports. He is a member of the Institute of Mechanical Engineers and of the Society of Arts.

## The Steel Corporation's Annual Meeting.

The annual meeting of the United States Steel Corporation was held at Hoboken, N. J., Monday, April 19. In the election of directors 1,956,290 shares of the preferred stock were voted, or 54 per cent. of the 3,602,881 shares outstanding, and 3,093,636 shares of common stock, or 60 per cent. of the 5,083,025 shares outstanding. About 20 stockholders were present. Chairman E. H. Gary presided. The following directors whose terms expired were re-elected: William Edenborn, Henry C. Frick, William H. Moore, Norman B. Ream, James H. Reed, Charles Steele, P. A. B. Widener and Robert Winsor. The election of Alfred Clifford as a director to succeed James Gayley was confirmed.

The following resolution was presented by J. Aspinwall Hodge, owner of 100 shares of preferred stock, and was voted down, Mr. Hodge alone voting in the affirmative:

*Resolved*, That the stockholders hereby disapprove of and protest against the action of the directors and officers of this corporation in securing the control of the Tennessee Coal, Iron & Railroad Company, thereby rendering the corporation liable to a forfeiture of its charter and to the penalty provided for in the State and Federal statutes; and

*Resolved*, That the Board of Directors and the officers of this company be and they are hereby requested to take such steps as may be legal to rescind such action and place the corporation as nearly as may be possible in the position it occupied prior to such action; and

*Resolved*, That the officers and directors of this corporation be and hereby are requested to hereafter wholly desist from all endeavors to control the iron and steel market or to secure the control of existing corporations who are competing with it until the Federal and State law shall be so modified as to make such action legal and then only when it shall appear to the directors in the exercise of their discretion to be advisable and for the ultimate good and gain of the company.

Referring to the above resolution, Chairman Gary said that at the time of the organization of the United States Steel Corporation in 1901 it controlled over 60 per cent. of the steel industry in the United States. Though it spent many millions of dollars for new construction in years following, its percentage of the total production of steel in the United States in 1907 was 56. The purchase of the Tennessee Company property added 2 1/4 per cent. to the Steel Corporation's percentage of the country's steel capacity. The acquisition of the Tennessee Coal, Iron & Railroad Company had not been under consideration before the panic of 1907. After the panic, when the company's properties were offered, the corporation negotiated for them on the basis of a lower price than that ultimately paid, but found that deliveries could not be made on that basis and therefore finally closed at the higher price. Chairman Gary further said that he and Mr. Frick stated to President Roosevelt that "we would not make the purchase proposed except for the financial depression which existed, which is true, although even at the price paid we shall no doubt ultimately, by making additional expenditures, realize material benefits."

Chairman Gary said that the improvement in the steel business since last year's meeting has been gradual, but that prospects are bright. The improvement last year, he said, began in January, and continued till December, when undercutting of prices by competitors began to make itself felt. He considered this action by the independents unjust and unfair to the steel trade, and the Steel Corporation had held out for established quotations for from four to six weeks. As a result of the reductions finally made, bringing prices down to a level which consumers considered close to cost, a buying movement started which resulted in a gradual increase of business, so that the volume is now in excess of what it was at the close of last year. He added that it is not the Steel Corporation's policy to cut prices to a level at which there is no profit, though some of the independent steel companies are probably finding little, if any, profit in recent quotations.

## French Iron and Steel Statistics.

According to the returns made to the Comité des Forges, the production of pig iron in France in 1908 was 3,391,150 metric tons, as compared with 3,588,949 tons in 1907 and 3,314,100 tons in 1906. Of the product of 1908, 1,949,107 tons was basic Bessemer pig, 594,426 tons foundry, 543,967 tons forge, 118,121 tons Bessemer and 28,111 tons spiegeleisen and ferromanganese. There was also produced 111,101 tons of direct casting, which included 82,000 tons of pipe.

The Meurthe-et-Moselle District led with 2,289,096 tons, or 67.5 per cent., followed by the nearby Nord District with 499,738 tons, or 14.7 per cent.

The consumption of ore amounted to 7,357,686 tons of domestic and 1,508,114 tons of foreign iron ore, 144,339 tons of foreign manganese and 649,652 tons of scrap, cinder and blue billy. The number of men employed was about 14,000.

The steel production in France amounted in 1908 to 2,727,617 metric tons, as compared with 2,766,773 tons in 1907 and 2,451,509 tons in 1906. Here again the Meurthe-et-Moselle District led, with 1,290,108 tons, or 47.2 per cent., and the Nord District was next, with 609,199 tons, or 22.3 per cent.

Of the total steel product, 77,581 tons was made in the acid Bessemer, 1,632,296 tons in the basic Bessemer, 1,002,789 tons in the open hearth, 12,662 tons in the crucible and 2289 tons in the electric furnace. The materials worked up comprised 18,684 tons of ore, 92,239 tons of Bessemer pig, 1,817,170 tons of basic pig, 374,960 tons of forge iron, 118,849 tons of special pig and 797,961 tons of scrap and old material.

The production of blooms in 1908 was 752,254 metric tons, and that of billets 563,745 tons, a total of 1,315,999 tons of semifinished steel, of which 239,183 tons of blooms and 177,438 tons of billets were shipped to other plants. Finished products to the total of 1,894,022 tons were made, of which 322,241 tons was rails, 49,373 tons tires, 137,262 tons beams (including, however, 34,315 tons reported as including beams, bars and various shapes), 323,756 tons various shapes (so reported specifically), 390,037 tons bars (including 70,640 tons of mixed beams, shapes and bars), 100,100 tons "machine," 56,346 tons wire, 52,560 tons merchant pipe and tubes, 37,967 tons tin plate, 344,772 tons sheets and plates, 40,343 tons forgings and 29,245 tons steel castings.

## Germany's Increased Iron and Steel Exports in 1908.

The statistics of German iron and steel exports in 1908 shows that they were about 8 per cent. greater than those of 1907, the totals being 3,732,428 metric tons and 3,455,899 tons, respectively. The imports of iron and steel declined from 832,354 tons in 1907 to 558,940 tons in 1908. The leading classes of iron and steel products as shown in the export statistics compare as follows:

	1907. Metric tons.	1908. Metric tons.
Pig iron.....	275,170	257,850
Scrap iron.....	120,596	163,761
Blooms, billets, &c.....	227,332	471,865
Rails .....	417,694	331,333
Sleepers and fishplates.....	206,940	121,613
Axles and tires.....	74,788	77,864
Bars, hoops, &c.....	302,148	544,900
Tubes, rods, &c.....	118,551	116,731
Plates and sheets.....	268,992	314,793
Wire .....	288,471	352,282
Wire nails.....	71,218	76,293

It will be seen that the increase last year was marked in semifinished steel, bars and hoops, plates, sheets and wire.

## The Pittsburgh Steel Construction Company Quits.

—This company, located in Pittsburgh, and which for several years has been an active factor in the fabrication of mill buildings, bridges, &c., has announced to the trade its intention to cease bidding on work. It has sold its plant, tools, stock of structural material, &c., and expects to retire entirely from the structural business upon the completion of certain contracts it has on hand.

## PERSONAL.

Thomas D. West, whose resignation as an officer of the Thomas D. West Foundry Company, Sharpsville, Pa., has been noted, has taken up his residence in Cleveland, Ohio. He will be associated with his son, who is president of the West Steel & Iron Casting Company, Cleveland, and will make further tests under a process he has patented for the manufacture of chilled car wheels. A public testimonial was given Mr. West at Sharpsville, and he was given a loving cup on behalf of his former employees. In the 20 years of his residence at Sharpsville Mr. West's labors have done much for the upbuilding of the important industry which bears his name, and he has been a tireless worker in the movement for the improvement of American foundry practice.

J. T. Miller, superintendent of the Scottdale Foundry & Machine Company, Scottdale, Pa., has resigned to become superintendent of the Connellsville Iron Works, Connellsville, Pa.

J. E. Little, chief engineer of the Spanish-American Iron Company, who has been at Steelton, Pa., left last week for the company's mines in Cuba.

Thomas R. Higgins, for many years president of the Standard Roller Bearing Company, Philadelphia, has been elected president of the Keystone Steel Castings Company, Chester, Pa.

William T. Gummey of the tin plate firm of Gummey, McFarland & Co., Philadelphia, has been elected a director in the Girard Avenue Title & Trust Company, in that city.

Wm. N. Ryerson, heretofore connected with the Ontario Power Company, has been made manager of the Great Northern Power Company, Duluth, vice E. P. Coleman, resigned.

E. P. Worden of the Fred M. Prescott Steam Pump Company delivered a lecture on "Modern Mine Pumping" before the Engineers' Society, Milwaukee, April 14.

A. Munch, sales manager of the Northern Metallic Packing Company, St. Paul, Minn., has resigned.

Bradley Stoughton, instructor in metallurgy, Columbia University, New York, has opened offices as a consulting metallurgist in the City Investment Building, 165 Broadway, New York, and in the Betz Building, Philadelphia. Announcement will be made later of a Pittsburgh office.

W. J. Filbert, secretary of the American Iron and Steel Institute, has gone abroad.

F. N. Hoffstot, president of the Pressed Steel Car Company, is on his way home from Europe.

E. W. Pittman, formerly chief engineer of the Pittsburgh Construction Company, has been appointed contracting engineer of the McClintic-Marshall Construction Company, Pittsburgh, in charge of territory in the vicinity of St. Louis.

James Walsh has been elected vice-president of the Pittsburgh Coal Company to succeed W. R. Woodford, who resigned April 1 to become president of the Rail & River Coal Company, Pittsburgh.

Frank S. Witherbee of Witherbee, Sherman & Co., Port Henry, N. Y., has returned from California.

William Cole, who for several years has held a responsible position with the Lackawanna Steel Company, Buffalo, N. Y., and who was formerly connected with the Tonawanda Iron & Steel Company, North Tonawanda, N. Y., has accepted the position of superintendent of the Canadian Iron Corporation's plant at Midland, Ontario, Canada, and will take charge about May 1.

Nicholas E. Marshall, for 27 years superintendent and sales manager of the Sandusky Tool Company, Sandusky, Ohio, has resigned to engage in business for himself at Chattanooga, Tenn.

W. R. Mason has been made manager of the plant of the American Car & Foundry Company, at Jeffersonville, Ind., and is now getting the works in readiness for operation. He has been connected with the American Car & Foundry Company and its predecessors for 20 years, and

was stationed at Detroit. Former manager G. R. Scanland returns to St. Louis to take his former post as assistant to the general auditor.

David Spence, one of the best-known men in the foundry trade, has been given charge of the Essex Foundry, Newark, N. J., manufacturing soil pipe, steam fittings, sinks, &c.

M. E. Dewstoe, First National Bank Building, Birmingham, Ala., has been appointed selling representative of the Bullard Machine Tool Company, Bridgeport, Conn., in the Alabama and Tennessee territory.

M. L. Fechheimer, manager of the Eastern office of the Joseph Joseph & Brothers Company, old railroad material, scrap and railroad supplies, 100 Broadway, New York, retired from that connection April 15, for the purpose of engaging in another line of business. Eli Joseph, president of the company, whose headquarters are in Cincinnati, has taken personal charge of the branch for the present.

C. T. Johnston, sales manager of the Cleveland office of the Republic Iron & Steel Company, has been promoted to assistant general sales manager, with headquarters at Pittsburgh. He will be succeeded in Cleveland by D. S. Guthrie, who has been sales manager at the Birmingham office of the company.

B. M. W. Hanson, works manager of the Pratt & Whitney Company, Hartford, Conn., sailed Tuesday on a short business trip to England.

## OBITUARY.

A. M. GILBERT, formerly president of the Buda Foundry & Mfg. Company, died April 14 of heart disease at Santa Barbara, Cal., to which place he went about one year ago on account of failing health. He was born in New Jersey in 1847, and went to Chicago before the great fire in 1871. He was for many years connected with the Howe Scale Company and Fairbanks Morse Company, the latter of which he served as vice-president until 1890 when he resigned to become vice-president and general manager of the Crane Company. In 1895 he returned to the Fairbanks Morse Company as vice-president, serving until 1903, when he again resigned to become president of the Buda Foundry & Mfg. Company. He was a member of the Chicago Club for 30 years. He leaves a widow and two children.

JAMES F. MORRISON, Pittsburgh, a prominent boiler manufacturer, died April 13, aged 59 years. He was born in Ireland and came to this country when a boy. He leaves a widow, two sons and four daughters.

GEORGE NISSEN of the Pope Metals Company, New York, died April 15, aged 62 years. He was born in Germany and had resided in this country 38 years. He was a member of the Board of Managers of the New York Metal Exchange for many years.

JOHN FROGETT, for many years prominently identified with the blast furnace industry in the Mahoning Valley, died at Youngstown, Ohio, April 18.

CORNELIUS JAY KANE, Pittsburgh, died suddenly April 7, of heart disease, aged 39 years. He had long been engaged in the iron and steel scrap business and at the time of his death was a member of the firm of J. B. Jones & Co. He was a member of the Pittsburgh Athletic Association and of the Manufacturers' Club, Philadelphia. He leaves a widow.

JOHN DENNIN HALL, a prolific inventor, died in New York City April 20, aged 80 years. He was born in Salisbury, Herkimer County, N. Y., and was graduated from Union College in 1854. His inventions greatly reduced the cost of manufacturing thermometers. He was the inventor of the Hall bar coupler and of a typewriter for the blind.

HENRY P. COOPER, superintendent of the Reading Iron Company's blast furnace at Emaus, Pa., died April 4, aged 55 years. He had a long experience in the iron business, having filled responsible positions with several prominent companies. He leaves a widow and a son.

### Seattle Business Notes.

SEATTLE, April 10, 1909.—Formal announcement has been made by James A. Moore, president and founder of the Irondale Steel Company, of the plans of that concern to rush work on two open hearth furnaces and a tube mill at the Irondale site, near Port Townsend, and about 40 miles from Seattle. The plant is expected to be running within six months from the present time. The directorate of the company has been increased by the addition of Oscar Mueller, vice-president of the Mueller Mfg. Company of New York and Decatur, Ill., and of Seward Babbitt, former vice-president of the Lash Steel Company of Buffalo. Nesbit Latta, who for more than a year past has been investigating the iron mines on Vancouver Island and the coal mines in Washington controlled by Mr. Moore, has made a report, in which he says he has definitely satisfied himself that the resources and conditions controlled by Mr. Moore and associates are such as to make it possible to manufacture steel here at a profit. The Moran Company of Seattle has completed part of the steel and wood construction work for the Irondale plant, and has built ladles, ladle cars and a 7-ton steel crane.

Activity in railroad building throughout Washington and Alaska does not abate. Interest just now centers in the early opening of the Chicago, Milwaukee & St. Paul through to the Pacific Coast this month, and the expectation of definite announcement at any time as to the speed with which Harriman will construct his line from Portland to Puget Sound. Work is already under way on the Harriman tunnel under Tacoma, and on the branch to Gray's Harbor. Active work is expected within the next 30 days on the balance of the line between the Columbia River and the Sound. Harriman's investment in terminal property at Seattle and Tacoma is already considerably more than \$15,000,000.

President Elliott of the Northern Pacific recently announced that his road would build a feeder from Adrian on the Great Northern, and the present terminus of the Washington Central, to Pasco; this will colonize a new district of eastern Washington, which is rich in promise. The Tacoma & Eastern is rapidly pushing its main line southeastward with the evident intention of crossing the summit of the Cascade Mountains into the Yakima country. Contractor Eschbach of the North Coast road announces that he has orders from President Strahorn to rush work on the connecting link of the grade that will finish the line from the Columbia River, below Kennewick, to the Yakima River. The road is to be completed to Yakima by January 1, when 100 miles of line will be in operation.

The contract for the first branch of the Chicago, Milwaukee & Puget Sound, one of a number of important feeders to be built by that line, has been let to H. C. Henry of Seattle for 80 miles of road in Idaho, from St. Maries to Potlatch.

The Pacific Oregon Railway & Navigation Company was recently incorporated by Tacoma men, who announce that the first road to be constructed will be 160 miles from Coos Bay, Ore., inland.

Dispatches from Vancouver, B. C., say the Canadian Pacific, in order to checkmate its rivals, is apparently planning to build a new line farther north than the present one. Beginning this fall the road will send large shipments of wheat from Calgary to Europe via the Pacific, through Vancouver. The moving northward of the center of the wheat belt makes a demand for the new line.

Two passenger locomotives for the Copper River & Northwestern, under construction by the Morgan and Guggenheim interests in Alaska, have reached here from the American Locomotive Company's works at Providence, for shipment by steamship to Cordova. A regular passenger and freight service is to be inaugurated before July 1 on the road from Cordova to the head of Abercrombie canyon on the Copper River. Practically all of the 7500 tons of structural steel for the bridge being built by this road across the Copper River has been assembled in the north, and the bridge crews are preparing

to sink the caissons at Miles Glacier, where for the next two years work will be in progress on the enormous structure.

Construction work will be resumed on the Alaska Central & Seward as soon as the snow leaves. W. T. P.

### The American Society for Testing Materials.

The twelfth annual meeting of the American Society for Testing Materials will be held at the Hotel Traymore, Atlantic City, N. J., Tuesday to Saturday inclusive, June 29 to July 3, 1909. The secretary, Prof. Edgar Marburg, in announcing the meeting, refers to the continued growth of the society. At the last annual meeting the membership was 1015. Since then 162 applications for membership have been approved and there have been 28 withdrawals and two deaths, making a net gain of 132. Thus the present membership is 1147.

Announcement is also made by Secretary Marburg of the fifth congress of the International Association for Testing Materials, with which the American society is affiliated. It will be held in Copenhagen, September 7 to 11, 1909. The indications are that the participation of American members in the international congress both by attendance and by the presentation of papers and reports will much exceed that at previous congresses.

**Wrought Iron and Steel Pipe.**—The Reading Iron Company, Reading, Pa., has brought out the eighth edition of its pamphlet on "Wrought Iron Pipe *versus* Steel Pipe." The preface calls attention to the new testimony brought forth in the controversy between wrought iron and steel as furnishing the reason for additional argument on the subject. The point is made that the short time since "modern" steel pipe made by a new process has been put into use precludes demonstration of its wearing quality in actual service. The communication of George Schuhmann, president of the Reading Iron Company, in *The Iron Age* of September 10, 1908, on "Spellerized Steel," is reprinted, together with correspondence passing between Prof. H. M. Howe and Mr. Schuhmann, dealing with statements in this communication. A ready method of testing pipe to ascertain whether it is made of wrought iron or steel is given. It is stated that the Reading Iron Company consumes the output of 118 double puddling furnaces, with an annual capacity of approximately 170,000 tons of puddled bars. All the wrought iron pipe, tubing, casing and line pipe of the company is made of puddled pig iron, no scrap being used except the crop ends of the pipe.

It was decided at a meeting of the directors of the Aero Club of America, April 13, to present to the Metropolitan Museum, the Historical Society of New York and the Numismatic Society bronze replicas of the medals which the club will present to Wilbur and Orville Wright when they return from Europe next month. The gold originals cost \$2000, and were designed by Victor D. Brenner, who made the Lincoln cent. President Taft will present the medals to the Wrights in the White House. It is reported that, following a conference between the Aviation Committee of the Automobile Club of America and the directors of the Aero Club on the same afternoon, President Bishop announced that steps had been taken whereby the Aero Club and Automobile Club would control aviation in America.

The Great Lakes Radio Telephone Company will install a wireless telephone station in the Chamber of Commerce Building, Buffalo, N. Y., to connect with similar stations in Cleveland, Toledo, Detroit, Milwaukee and Chicago, and with a comprehensive system of wireless telephones with which the company has planned to surround and cover the Great Lakes from Buffalo to Duluth and Chicago. The Flint & Walling Company, Kendallville, Ind., has the contract for erecting the Buffalo tower on the roof of the Chamber of Commerce Building, reaching 150 ft. into the air, and for the towers for the other stations of the company.

## NEWS OF THE WORKS.

## Iron and Steel.

The E. & G. Brooke Iron Company, Birdsboro, Pa., will build a new blast furnace in place of its No. 3 stack. Frank C. Roberts & Co., Philadelphia, are the engineers.

Edward S. Atwater, receiver for the Poughkeepsie Iron Company, Poughkeepsie, N. Y., announces that he has an offer under consideration for the purchase of the property, located at the foot of Dean street, Poughkeepsie. The blast furnaces have a capacity of 75,000 tons of pig iron yearly and have not been operated for the past five years. Mr. Atwater is himself interested in the new organization to take over the property, and states that if the deal is consummated that the plant will probably use ore from the Forest of Dean mines, of which he is president. As the plant has been out of running order for a considerable time it will require about four months' time and the adding and overhauling of considerable machinery to place it in running order.

The Scovill Iron & Steel Company, 241 Seventeenth street, Jersey City, N. J., has been incorporated to manufacture machine bolts, spikes, tie rods, hangers, &c. P. A. Scovill is president; D. D. T. Story, vice-president; W. A. J. Crompton, secretary, and E. M. Scovill, treasurer.

Another turbo generator has just been started at the plant of the Youngstown Sheet & Tube Company, Youngstown, Ohio. This company previously had in operation two 1500-kw. generators and one 1500-kw. low pressure generator. The new one is 2000-kw. This gives the company a 6500-kw. system supplying power for the wire plant at Struthers and the furnaces. The wire galvanizing department recently placed in operation by the company is working smoothly and turning out a large amount of product.

At the annual meeting of the Bethlehem Steel Company and Juragua Iron Company, held April 13 in Philadelphia, the following directors were elected to serve for the ensuing year: Bethlehem Steel Company—William G. Coxe, Wilmington, Del.; E. G. Grace, Archibald Johnston, Wm. B. Myers, H. S. Snyder and F. A. Schick, Bethlehem, Pa.; B. H. Jones, C. A. Buck and C. M. Schwab, South Bethlehem, Pa. Juragua Iron Company—C. A. Buck and B. H. Jones, South Bethlehem, Pa.; E. G. Grace, Archibald Johnston and H. S. Snyder, Bethlehem, Pa.

The plant of the Sligo Iron & Steel Company, at Connellsville, Pa., shut down last week for an indefinite period, while some extensive improvements will be made, among which will be two additional heating furnaces. In the past year electrical power was installed and some labor saving devices were introduced.

The Wm. B. Pollock Company, Youngstown, has received a contract for all the iron and steel work for the new furnace to be built by the Andrews & Hitchcock Iron Company at Hubbard, Ohio, to replace its No. 1 stack. The construction of the new stack has already started. Julian Kennedy, Pittsburgh, is the consulting engineer.

The sale of the Quinn furnace properties at Gadsden, Ala., which was to have taken place on April 16, has been postponed 30 days.

## General Machinery.

Plans have been completed by the Pittsburgh & Lake Erie Railroad for extensive improvements and extensions to the car shops at McKees Rocks, Pittsburgh, and a large portion of the cars and locomotives used on that road will be built at these shops when the improvements are completed.

The Boutell Mfg. Company, manufacturer of evaporating machinery, 558 Lyell avenue, Rochester, N. Y., and the Papec Machine Company, Lima, N. Y., which are conducted under the same management, are negotiating for the purchase of the buildings formerly occupied by the American Seeding Machine Company at Shortsville, N. Y., with a view of moving their two plants to the latter location. The deal has not yet been definitely closed.

F. F. Slacomb & Co., Wilmington, Del., have purchased all the machine tools it will require for the present for the new addition to its plant, but later on it will probably install additional tools. The addition is intended to give increased facilities for assembling and for storage.

Kelley & Johnson, Fulton, N. Y., have purchased the building formerly occupied by the Fuller blacksmith shop, and will remodel it into a building to be used as an auto garage and machine shop.

A new stock company incorporated at \$50,000 is being organized at Virginia, Minn., to build and operate a foundry and machine shop. Work on the shop buildings has already been started. J. G. Mattala is interested in the new company.

The Carnegie Steel Company has added to the 1550 hp. in Crocker-Wheeler form W motors in its Duquesne plant by the purchase of three more motors of the same make and type, especially designed for rolling mill work, aggregating 225 hp.

The Gainville Machine & Boiler Works, Gainville, Texas, recently organized, has succeeded to the business formerly con-

ducted by Mosly Brothers and J. L. Mosly. The company will operate a machine shop, principally for repairs, and in connection will conduct a mill supply business. E. P. Bomar will be president. The business will be under the management of George Sarber and W. A. McGlennan, both of whom are thorough mechanics.

Hoiden & Tucker, Chrisman, Ill., are building a machine shop and garage, which is to be equipped with machinery required for the repair of automobiles and general machine work.

The Ferguson Bros. Well Drilling Machine Company, Waterloo, Iowa, contemplates an extension to its factory.

The Chamberlain Machine Works, established about four years ago at Waterloo, Iowa, is arranging to extend its plant by the erection of a 27 x 40 ft. two story brick addition.

B. D. Tillinghast, McDonald, Pa., has purchased an acre of ground upon which he will erect a machine shop about 50 x 100 ft., employing from 15 to 25 men.

The General Electric Company, Schenectady, N. Y., is building a two-story brick addition to its plant, 85 x 150 ft.

The Sterling Engine Company, Buffalo, N. Y., builder of engines for automobiles and motor boats, will erect and equip a two-story and basement brick addition to its plant at 1250-1254 Niagara street. The addition will be used for a foundry and additional machine shop room.

## Foundries.

C. H. Booth of the Lloyd-Booth department of the United Engineering & Foundry Company, at Youngstown, Ohio, states that the foundry business in the Youngstown District has improved considerably during the past three months. The Lloyd-Booth department has been running to about 80 per cent. of its capacity for two months.

The Latrobe Foundry Company, Baltimore, Md., organized by Frederick O. Latrobe, Jr., and John Shane, has opened a foundry at Allan and Clement streets, where it will produce 5 tons of gray iron or semi-steel castings and 1800 lb. of brass or bronze castings a day. Castings for machinery and chemical apparatus will be made a specialty. The plant is 55 x 167 ft. and is well equipped.

The Northern Engineering Works, Detroit, Mich., has recently shipped Newton cupolas to the Quinn Wire & Iron Works, 4-ton; Sheridan Stove Company, 12-ton; Brown Mfg. Company, 4-ton; Wagner Brothers, 5-ton; William Fetzer & Co., for their new plant at Springfield, Ill., one 10-ton, and Southern Wisconsin Iron Company, Madison, Wis., a 10-ton Northern crane, with 56-ft. span, for its new foundry.

The statement was telegraphed from Sharpsville last week that Thomas D. West would organize a company and build a plant there for the manufacture of a chilled car wheel on which he obtained a patent recently. Mr. West has options on a site at Sharpsville, with a view to such a step in case further tests warrant, but nothing will be done immediately.

Adrian Platt & Co., Poughkeepsie, N. Y., have completed extensive improvements at their plant. A new tumbling room has been equipped, where the castings are taken from the foundry and cleaned in tumbling boxes which are connected with suction system of gathering up the dust. They have also completed a water cylinder mill for the separating of the iron and coke from the refuse of the foundry cupola, thus saving much of the material that formerly was wasted. The machinery in the smith shop has been changed over to direct motor driven.

The Loy-Wilson Foundry & Machine Works, Aurora, Mo., expects in the near future to move its plant to Muskogee, Okla.

The plant of the Greensburg Foundry & Machine Company at Jeannette, Pa., was destroyed by fire April 4, the loss being about \$25,000, with insurance of \$17,300. The plant will probably be rebuilt at once on a larger scale and considerable new foundry equipment will be needed.

## Power Plant Equipment.

The Denfee Electric Company, San Francisco, Cal., has been incorporated with a capital stock of \$100,000 by C. H. Dunfee, F. Finck, A. J. Shaw, E. W. Shaw and Alice M. Dunfee.

The Nicholville Electric Light Company, Nicholville, N. Y., whose plant was recently damaged by fire, will install a 300-kw. generator. The water wheels, of 500 hp. capacity, were not damaged.

The Acker Electrical Company, Sheboygan, Wis., to provide for the expansion of its business of installing power and lighting plants, has been incorporated with a capital stock of \$15,000 by John L. Acker, Harry E. Thomas and Paul T. Krez.

The City Electrician of Richmond, Va., will receive bids until April 27 for the equipment for an electric plant, including dams, raceways, foundations, rock excavator, brick chimney, turbines, intake gates and gear, generators, steam turbines, boilers, pumps, condensers and other accessories.

The Fond du Lac Water Company, Fond du Lac, Wis., is planning to increase its capacity by the installation of a 1,000,000-gal. Byron-Jackson pump; also a direct connected engine and generator to generate from 75 to 100 hp. electric current, besides some other improvements. In connection with the proposed improvements the company is investigating crude oil en-

gines with a view to ascertaining their adaptability to water pumping service. Information from manufacturers of such equipment is desired.

The Joseph Electric Light & Power Company, Joseph, Ore., having secured a 30-year franchise from the City Council, is planning to increase the capacity of its plant. Details of the new equipment required have not been fully developed, but it is expected that it will include a generator of about 300 kw. capacity. The plant is to be operated by water power and will probably be ready for operation within six or eight months.

Henry V. Bisgood, chairman of the Board of Trustees of the City and County Building, Buffalo, N. Y., will receive sealed bids until May 1 for a complete electric light and power plant for the City and County Building, including steam engines, generators, switchboards, complete system of interior electric wiring, chandeliers, lamps, &c. Plans and specifications can be obtained from the superintendent of the building. The estimated cost of the plant is \$75,000.

The Oswego County Light & Power Company, Oswego, N. Y., has petitioned the Public Service Commission for authority to increase its capital stock \$100,000, the increased capital to be used for the development of a hydro-electric plant at Salmon River Falls. The company's engineer estimates that about 15,000 hp. can be developed. The company is not yet ready to take up the construction work, and it will probably be two or three months before it will have its plans and specifications ready. Henry D. Brewster of Syracuse is president.

The Fred M. Prescott Steam Pump Company, Milwaukee, Wis., is installing a crank and flywheel pump at the Junction mine in Bisbee, Ariz.

Theodore Swann, Bristol, Va., and other capitalists intend to erect a hydro-electric plant to provide current for the two Bristols. Power sites, rights of way and franchises have already been secured, as have contracts for light and power to the value of \$80,000 per year.

Recent orders secured by the Hewes & Phillips Iron Works, Newark, N. J., include a 100-hp. cross compound engine for the Windham Mfg. Company, Willimantic, Conn.; cross compound condensing engine, direct connected to 300-kw. generator, Oakville Company, Oakville, Conn.; 400-hp. Corliss engine, Down-Plum Company, Newark, N. J.; 100-hp. Corliss engine, Sanitary Can Company, Bridgeton, N. J.; 12 x 30 in. Corliss girder frame engine, Adam Happel, New York; eight special engines, 16½ in. diameter x 24 in. stroke, direct connected through flexible couplings to blowing apparatus, to be used in distributing illuminating gas under pressure and to be arranged for special pressure control, Public Service Corporation of New Jersey, Newark, N. J. The engines will be of the heavy tangye type. The company reports an increased demand for its high grade castings.

The Donk Gas Engine Company, Oakland, Cal., will supply equipment for a new pumping station to be established at Yuba City, Cal.

Allis-Chalmers-Bullock, Ltd., Montreal, Que., has been awarded contract for installing a second hydraulic turbine and generator of 1000 hp. for the city of Nelson, B. C.

The Wheeling & Lake Erie Railroad is installing in its shops at Norwalk, Ohio, a 300-hp. engine built by the Russell Engine Company, Massillon, Ohio, direct connected to a Bullock generator. This marks the beginning of the abandonment of the old power equipment and substitution of electric motor drive.

Plans are under consideration by the city of Provo, Utah, for the installation of a municipal electric power and lighting plant. The question of location has not yet been determined, but will probably be decided by a popular vote within the next 30 days. The plant will probably be established at some point on the Provo Canyon, and will at the lowest estimate involve the expenditure of over \$100,000. C. F. Decker is mayor.

The Cairo Electric & Traction Company, Cairo, Ill., which is building nine miles of interurban road connecting Cairo, Mound City and Mounds, has under construction a new power house to supply current for lighting in the city of Cairo and for the operation of the cars of the Cairo & St. Louis Railway Company. There are now being installed three 400-hp. Sterling boilers, and there will later be installed one 500-kw. 2300-volt three-phase Curtis turbine; also a 750-kw. 600-volt direct current generator set. Between these two machines will be installed a 300-kw. motor generator set. The complete rehabilitation of the present street railroad lines and equipment is embraced in the improvements, of which those named are a part.

The Central Heating & Mfg. Company, Little Rock, Ark., has added to its equipment by the purchase of one 300-hp. Skinner engine, one two-stage turbine or centrifugal pump of 6,000,000 gal. capacity in 24 hr., made by the Lawrence Pump & Engine Company, and one 500-hp. Sterling boiler, all of which, it is expected, will be installed by July 1.

According to advices received from the City Clerk of Hydro, Okla., an electric light plant and water works system is being planned for that place, the estimated cost being \$25,000. Burns & McDonnell, Scarritt Building, Kansas City, Mo., are consulting engineers.

The Metropolitan Investment Company, Spokane, Wash., has

been organized to construct and equip an electric power plant to furnish current for lighting Orient and neighboring towns and power for the operation of mines in that vicinity.

Commissioner of Public Works Francis G. Ward, Buffalo, N. Y., has been authorized by the Board of Aldermen to prepare plans and advertise for bids for three electrically driven pumps for the new water works system, two of 20,000,000 gal. and one of 25,000,000 gal. capacity.

#### Bridges and Buildings.

A contract has been let by the Board of Regents of the University of North Dakota to Melby & Standal, Grand Forks, N. D., for the construction of a new building to accommodate the power and lighting plant. The building is to be completed by August 1. Joseph Beel DeRemer has been employed as architect to prepare plans for a \$40,000 commons building and a \$60,000 teachers' college building, bids for both of which will be called for at a later date.

The Syracuse Cold Storage Company, 200 North West street, Syracuse, N. Y., awarded contract last week to Dawson Brothers, Kirk Building, for the construction of a seven-story brick and steel cold storage building, to be erected at North West and Tracy streets. The steel work was included with the general contract and will be sublet.

The Standard Steel Car Company, Pittsburgh, has placed a contract with B. A. Groah & Co. for the building of a four-story steel frame fireproof office structure, to be erected near its plant at Butler, Pa.

The Wm. B. Scaife & Sons Company, Pittsburgh, has received a contract from the Standard Steel Company, Cleveland, Ohio, for the structural steel work for several new buildings to be erected near Bedford, Ohio.

Six steel bridges are to be built this year by the Grand Trunk Pacific Railroad between Copper River and Prince Rupert, B. C.

A 350-ft. steel bridge, with approaches, is to be built across the Holston River, near Rogersville, Tenn. J. R. Sanders heads the Board of Construction, which has not yet let the contract.

Among recent contracts secured by the Indiana Bridge Company is one to construct a steel frame brick factory for the Muncie Automobile Wheel Company.

#### Fires.

The shops of the Western Maryland Railroad at Elkins, W. Va., were damaged \$15,000 by fire April 11.

The factory of the Mannington Glass Company, Mannington, W. Va., was destroyed by fire April 18, the loss being about \$50,000.

The plant of the Independent Steel & Iron Company, Cuyahoga Falls, Ohio, was damaged \$30,000 by fire April 14.

The large fertilizer plant of the Imperial Company at Norfolk, Va., was burned April 16, the loss being about \$100,000.

The pattern shop of the Fishkill Landing Machine Company, Fishkill-on-Hudson, N. Y., was burned April 13, the loss being about \$25,000.

#### Hardware.

As a step preliminary to the further expansion of its business the Hall-Benedict Mfg. Company, Monticello, Iowa, expects to incorporate with a fully paid up capital stock of \$50,000. The improvements contemplated include the extension of the plant by the erection of new buildings, the first of which, containing about 8000 sq. ft. of floor space, is now under way. The company began the manufacture of the Benedict wire stretcher, steel hoist and tackle and the Schoenheer steel baskets about one year ago. The demand for these products has outgrown the initial buildings built for their manufacture, which are now to be enlarged by fuller equipment and better shop accommodations.

The United States Steel Lock Company, Lyons, Iowa, is planning an addition to its factory.

The Bauer Machine Company, manufacturer of the Bauer lock stitch sewing machine, Jeffersonville, Ind., has under consideration inducements made by the Commercial Club of Louisville, Ky., to move the plant to that city. No decision has yet been reached as to whether or not the offer will be accepted.

#### Miscellaneous.

The Bi-Cal-Ky Auxiliary Spring Company, 866 Prospect avenue, Buffalo, N. Y., has been incorporated with a capital stock of \$100,000 to manufacture an auxiliary spring used on automobiles and other vehicles. The spring has a neutral position and works in connection with the present springs now on automobiles or wagons and assists in carrying the heavy loads and jolts. It also prevents the frame and axle from coming together. The company has made arrangements for manufacturing the springs. H. E. Bicalky is president.

The Russellville Iron Ore & Metal Company, Birmingham, Ala., recently incorporated with a capital stock of \$100,000, will operate iron ore and coal properties, the intention being to erect a furnace later. H. F. De Bardeleben is interested.

The Ahibrand Carriage Company, Seymour, Ind., whose plant was recently destroyed by fire, intends to rebuild the structures within the next two or three months, when it will require a complete equipment of carriage building machinery.

## The Iron and Metal Trades

There is considerably more interest in the pig iron markets, the impulse made by the sales of Southern iron during the past two weeks being felt in nearly all parts of the country. A considerable amount of business has been done, in some instances very quietly. The pipe makers who were the first have purchased further quantities in the Central West, and one Ohio shop is now in the market for a total of 24,000 tons for delivery from May to October. The founders have bought more liberally and some large interests have inquiries out. Among them is a leading electrical concern, which is calling for 12,000 tons. The Westinghouse Company has bought 10,000 tons for Cleveland and Pittsburgh. The malleable makers are testing the market, and one Eastern plant has taken 10,000 tons. Basic steel makers in the Central West have done some buying and negotiations are pending for further round lots. Numerous buyers are endeavoring to cover requirements for the second half at the present range of prices, and thus far have generally been successful in doing so, there being a sufficient number of makers to meet their views. It is doubtful, however, whether a more general tendency in this direction would not soon exhaust these available supplies at the present range of values, in spite of the large stocks in different producing sections.

The report of an export sale of 6000 tons of Southern iron to Genoa is not confirmed.

Although reports of sales of finished iron and steel at very low prices are frequently incorrect, and although buyers are to an unusual extent playing sellers against one another, it is true that bars, plates and structural material are distinctly weaker. A leading interest is reported to have secured the 15,000 tons of bars, plates and shapes for the Isthmian Commission, at prices which have not yet been made public. Some good contracts for reinforcing bars have come out.

The low prices are telling on the volume of business, and urgent efforts are being made in many quarters to commit the mills to as long a period as possible. Chicago shows the effect of a larger volume of work, particularly for agricultural purposes. How it is telling is evidenced by the fact that the Illinois Steel Company is running 84 per cent. of its finished capacity.

It looks as though the greater part of the structural work required for bridges by the railroads has now been gathered in, and only two or three contracts of any consequence are still pending. In the more distant future some further large requirements may come up. On the other hand, buildings and manufacturing structures are coming up more freely.

Some fair orders for steel rails for export have been booked. These include 13,000 tons for the Guaymas & Yaqui River, 6000 tons for Panama and 5000 tons for Brazil. Domestic sales include 6000 tons for the Ann Arbor and 4000 tons for the Manistee & Northeastern. In Chicago there are inquiries from two roads for an aggregate of 30,000 tons and considerable work from trolley lines. Spikes and track material have been selling at low prices lately.

Car orders are coming out very sparingly. The latest of any consequence reported is 1500 steel cars for the Denver & Rio Grande Railroad.

Prices in the wire trade are lower, and concessions are being quite generally made. A formal announcement of revised prices has not yet been promulgated, and is not expected for some weeks to come.

The merchant pipe trade is rather behind expectations as to the time of seasonable activity. One of the larger contracts coming up is for 375 to 400 miles of 6 and 8 in. pipe for an oil line in Illinois.

Copper is a shade easier at 12½c. for electrolytic. The exports are large.

Some pretty large purchases of lead by cable manufacturers have stiffened the price up to 4.25c. spot, New York. The white lead business is good, but not up to the level of last year, when it was phenomenal. Spelter is steady at 5.07½c., New York.

### A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Apr.21, 1909.	Apr.14, 1909.	Mar.24, 1909.	Apr.22, 1908.
<b>PIG IRON, Per Gross Ton:</b>				
Foundry, No. 2 standard, Philadelphia .....	\$16.25	\$16.25	\$16.25	\$17.50
Foundry No. 2, Southern, Cincinnati .....	14.25	14.25	14.75	15.25
Foundry No. 2, local, Chicago .....	16.50	16.50	16.50	17.70
Basic, delivered, Eastern Pa. ....	15.00	15.00	15.50	17.25
Basic, Valley furnace .....	14.00	14.00	14.75	15.25
Bessemer, Pittsburgh .....	15.65	15.90	16.15	17.25
Gray forge, Pittsburgh .....	14.40	14.40	14.40	15.40
Lake Superior charcoal, Chicago .....	19.50	19.50	19.50	20.00

<b>BILLETS, &amp;c., Per Gross Ton:</b>				
Steel billets, Pittsburgh .....	23.00	23.00	23.00	28.00
Forging billets, Pittsburgh .....	25.00	25.00	25.00	30.00
Open hearth billets, Philadelphia .....	25.40	25.40	25.40	29.20
Wire rods, Pittsburgh .....	29.00	29.00	33.00	35.00
Steel rails, heavy, at mill .....	28.00	28.00	28.00	28.00

<b>OLD MATERIAL, Per Gross Ton:</b>				
Steel rails, melting, Chicago .....	13.50	13.00	13.00	12.00
Steel rails, melting, Philadelphia .....	13.25	13.00	13.50	12.75
Iron rails, Chicago .....	16.25	16.00	16.00	15.00
Iron rails, Philadelphia .....	17.00	17.00	17.00	17.00
Car wheels, Chicago .....	14.50	14.50	14.50	13.50
Car wheels, Philadelphia .....	14.00	14.00	14.00	14.00
Heavy steel scrap, Pittsburgh .....	14.00	14.00	14.00	12.75
Heavy steel scrap, Chicago .....	12.50	12.25	12.00	11.00
Heavy steel scrap, Philadelphia .....	13.25	13.00	13.50	12.75

<b>FINISHED IRON AND STEEL,</b>				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia .....	1.37	1.37	1.37	1.50
Common iron bars, Chicago .....	1.27½	1.30	1.32½	1.65
Common iron bars, Pittsburgh .....	1.30	1.30	1.35	1.50
Steel bars, tidewater, New York .....	1.26	1.31	1.36	1.76
Steel bars, Pittsburgh .....	1.10	1.15	1.20	1.60
Tank plates, tidewater, New York .....	1.41	1.46	1.46	1.86
Tank plates, Pittsburgh .....	1.25	1.30	1.30	1.70
Beams, tidewater, New York .....	1.41	1.46	1.46	1.86
Beams, Pittsburgh .....	1.25	1.30	1.30	1.70
Angles, tidewater, New York .....	1.41	1.46	1.46	1.86
Angles, Pittsburgh .....	1.25	1.30	1.30	1.70
Skelp, grooved steel, Pittsburgh .....	1.20	1.25	1.25	1.55
Skelp, sheared steel, Pittsburgh .....	1.30	1.35	1.35	1.65

<b>SHEETS, NAILS AND WIRE,</b>				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh .....	2.20	2.20	2.20	2.50
Wire nails, Pittsburgh .....	1.85	1.90	1.95	2.05
Cut nails, Pittsburgh .....	1.70	1.80	1.80	1.90
Barb wire, galv., Pittsburgh .....	2.30	2.35	2.40	2.50

<b>METALS, Per Pound:</b>				
	Cents.	Cents.	Cents.	Cents.
Lake copper, New York .....	12.87½	13.00	13.00	13.00
Electrolytic copper, New York .....	12.62½	12.75	12.50	12.75
Spelter, New York .....	5.07½	4.85	4.80	4.65
Spelter, St. Louis .....	4.95	4.77½	4.65	4.50
Lead, New York .....	4.25	4.15	4.05	4.00
Lead, St. Louis .....	4.20	4.10	3.90	3.85
Tin, New York .....	29.55	29.35	28.50	31.70
Antimony, Hallett, New York .....	8.00	7.75	7.75	8.75
Nickel, New York .....	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York .....	\$3.64	\$3.64	\$3.64	\$3.89

### Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rate from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural steels and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Structural Shapes.**—I-beams and channels, 3 to 15 in., inclusive, 1.30c., net; I-beams over 15 in., 1.40c., net; H-beams over 8 in., 1.50c.; angles, 3 to 6 in., inclusive, ¾

in. and up, 1.30c., net; angles, over 6 in., 1.40c., net; angles, 3 x 3 in. and up, less than 1/4 in., 1.50c., base, half extras, steel bar card; tees, 3 in. and up, 1.30c., net; zeos, 3 in. and up, 1.30c., net; angles, channels and tees, under 3 in., 1.20c., base, half extras, steel bar card; deck beams and bulb angles, 1.60c., net; hand rail tees, 2.70c., net; checkered and corrugated plates, 2.70c., net.

**Plates.**—Tank plates, 3/4 in. thick, 6 1/4 in. up to 100 in. wide, 1.30c., base. Extras over this price are as follows:

Tank, ship and bridge quality, 1/4-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered 1/4-in. plate. Steel plates over 72 in. wide must be ordered 1/4-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16 in. shall take the place of 3-16 in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under 1/4-in. to and including 3-16-in. plates on thin edges.....	\$0.10
Gauges under 3-16-in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete circles.....	.20
Boiler and flange steel plates.....	.10
"A. B. M. A." and ordinary firebox steel plates.....	.20
Still bottom steel.....	.30
Marine steel.....	.40
Locomotive firebox steel.....	.50
Shell grade of steel is abandoned.	
For widths over 100 in. up to 110 in.....	.05
For widths over 110 in. up to 115 in.....	.10
For widths over 115 in. up to 120 in.....	.15
For widths over 120 in. up to 125 in.....	.25
For widths over 125 in. up to 130 in.....	.50
For widths over 130 in.....	1.00

**TERMS.**—Net cash 30 days. Pacific Coast base, 1.30c., f.o.b. Pittsburgh.

**Sheets.**—Minimum prices for mill shipments on sheets in carloads and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, No. 10 and heavier, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 2.05c. Box annealed sheets, Nos. 17 to 21, 2c.; Nos. 22 to 24, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.35c. Galvanized sheets, Nos. 13 and 14, 2.30c.; Nos. 15 and 16, 2.40c.; Nos. 17 to 21, 2.50c.; Nos. 22 to 24, 2.65c.; Nos. 25 and 26, 2.85c.; No. 27, 3.05c.; No. 28, 3.25c.; No. 29, 3.35c.; No. 30, 3.60c. Painted roofing sheets, No. 28, 1.55c. per square. Galvanized roofing sheets, No. 28, 2.80c. per square for 2 1/2-in. corrugations.

**Wrought Pipe.**—Discounts on steel pipe, 1/4 to 6 in., in carloads to the largest trade, are 76 and 5 per cent. off list, and on iron pipe, 4 1/2 to 8 in., are 69 and 5 per cent. off list.

**Boiler Tubes.**—Regular discounts are as follows:

Boiler Tubes.	Steel.
1 to 1 1/2 in.....	.50
1 1/2 to 2 1/2 in.....	.62
2 1/2 to 3 in.....	.70
3 to 4 in.....	.84
4 to 6 in.....	.92
6 to 13 in.....	.92
2 1/2 in. and smaller, over 18 ft. long, 10 per cent. net extra.	
2 1/2 in. and larger, over 22 ft. long, 10 per cent. net extra.	

**Wire Rods.**—Bessemer rods, \$29; chain rods, \$29; basic rods, \$30.

## Chicago.

FISHER BUILDING, April 21, 1909.—(By Telegraph.)

Responding to the stimulus of lower prices, trade in finished material has become decidedly more active. Instead of bending their energies to the booking of long time contracts, the mill interests have been striving to secure orders with specifications, with the result that finishing mills are now operating at fuller capacity than at any time since the panic. This is particularly true of the Illinois Steel Company, whose finishing departments are now running at 84 per cent. of capacity. The extent of improvement is more clearly set forth by the statement that the volume of current orders and specifications being entered by this interest is now running 3000 tons a week ahead of the highest rate recorded in 1907, when its books were heavily loaded with contracts. Prices, however, are less satisfactory, plates, structural shapes and bars having developed further weakness in the past few days. The prices which have heretofore been made only in exceptional cases have become more general, and the ruling market values of these commodities are about \$1 a ton below those currently quoted a week ago. It is becoming apparent even to consumers that the bottom limit of recession has been very nearly, if not altogether, reached on the heavier mill products. While it is admitted that the shading of wire and wire products has become more pronounced, it is officially denied by the leading in-

terest that any change in the regular schedule has been announced, as is reported. The recognized price of \$28 for forging billets is no longer being even nominally held, \$2 a ton under these figures having been done, and even lower quotations are currently reported. The unsettled state of the steel market is further emphasized by the reported sale of a large tonnage of rolling billets by an Eastern mill for delivery in Pennsylvania at \$20.65. A more hopeful prospect is afforded by the increasing firmness of pig iron, the nominal price of \$11, Birmingham, having now been withdrawn by all the leading furnaces—an advance of 50c. a ton for all deliveries, both present and future. A majority of the large consumers have contracted for at least a part of their requirements at the low price, but, from the number of unfilled inquiries of moderate sizes yet in the market, it is believed that there are a good many orders yet to be supplied. Several buyers, confident that the price would break to \$10.50, or even lower, declined to purchase at \$11. Among such lots still pending is one of 3000 to 5000 tons representing the requirements of an Indiana vehicle concern. One of the Southern producers, which up to last week was selling at \$11, Birmingham, advanced to \$11.50 for third quarter and \$12 for fourth quarter, at which price sales amounting to 2500 tons are reported. As respects the situation of Northern furnaces, conditions are unchanged, except in so far as they are affected by the Valley price, which is \$14 at furnace.

**Pig Iron.**—The buying movement in Southern iron started by the offer of \$11, Birmingham, made by two of the leading Alabama interests, has resulted in the placing of a large number of contracts covering second and third quarter requirements of melters in this district. The amount of iron taken at this price cannot be accurately estimated, but that the tonnage was sufficient to fill up a fair portion of the furnace capacity is evident from the fact that the \$11 price has been withdrawn. No quotation better than \$11.50 for second half delivery is now being offered by any of the Southern producers, and most of those making this figure are restricting it to shipments through the third quarter. Of the leading Alabama producers, only one is booking for the remainder of the year at this price, while another is holding at \$12, with a possible concession of 25c. a ton on prompt shipment. The market, therefore, has scored an advance of 50c. a ton, which makes a delivered price of \$16.40, Chicago. While \$16 at furnace, or \$16.50 delivered, is being held by the local furnaces, outside prices are being met, and no Valley iron of any consequence is entering this market. The following quotations are for April, May and June delivery, f.o.b. Chicago:

Lake Superior charcoal.....	\$19.50 to \$20.00
Northern coke foundry, No. 1.....	17.00 to 17.50
Northern coke foundry, No. 2.....	16.50 to 17.00
Northern coke foundry, No. 3.....	16.00 to 16.50
Northern Scotch, No. 1.....	17.50 to 18.00
Southern coke, No. 1.....	16.35 to 16.85
Southern coke, No. 2.....	15.85 to 16.35
Southern coke, No. 3.....	15.35 to 15.85
Southern coke, No. 4.....	14.85 to 15.35
Southern coke, No. 1 soft.....	16.35 to 16.85
Southern coke, No. 2 soft.....	15.85 to 16.35
Southern gray forge.....	14.35 to 14.85
Southern mottled.....	14.10 to 14.60
Malleable Bessemer.....	16.50 to 17.00
Standard Bessemer.....	17.90 to 18.40
Jackson Co. and Kentucky silvery, 6 %.....	19.90 to 20.40
Jackson Co. and Kentucky silvery, 8 %.....	20.90 to 21.40
Jackson Co. and Kentucky silvery, 10 %.....	21.90 to 22.40

(By Mail.)

**Billets and Rods.**—Billet prices have definitely receded to a lower level. A sale of 500 tons of forging billets at \$26, Chicago, is reported, while another lot of 50 tons brought \$27. Rolling billets are quoted at \$24, Chicago. It may be said, however, that the market is not absolutely firm even at \$26 and \$24 for forging and rolling billets, respectively. In wire rods little new business is developing.

**Rails and Track Supplies.**—While no new rail orders of consequence are reported, there are some inquiries in the market, which are believed to represent necessities that must be covered by the roads in the near future. Two such inquiries now pending include an aggregate of 30,000 tons, half of which will be needed for a 126-mile extension of a Northern road, the remaining half being for a short line in the Northwest. Rail inquiries from electric traction lines are becoming more numerous, and it is evident that a good many projects of this kind are under consideration throughout the Middle West. Under favorable conditions a good many of these may be expected to reach the point of placing orders this season. One such inquiry for 7700 tons of 70-lb. rails has been put out by the Marlum Construction Company, Kansas City, Mo. The demand for light rails is only fair, and the price of \$24 for 25 to 45 lb. sections, which is fairly well maintained on business in this immediate territory, is shaded \$1 a ton or more in Eastern or Southern territory, according to the character of competition to be met.

**Structural Material.**—Contracts taken by fabricators

last week were generally of unimportant size and comparatively few in number. The West Lake Construction Company, St. Louis, secured the general contract for the Indianapolis City Hall, 1000 tons; the McClintic-Marshall Construction Company is reported to have secured an order for water tank towers amounting to 2000 tons; a contract for 2400 galvanized transmission line towers aggregating 2500 tons has been let by the Great Falls Water Power & Town Site Company, Great Falls, Mont. Work calling for 250 tons of plates and rods was let by the Great Northern Railway to the King Bridge Company. Among the projects upon which bids are being submitted are 2800 tons of bridge material for the Rock Island; a bascule bridge to be built by the Sante Fé Railroad at Galveston, Texas, estimated at 400 tons; five highway bridges for the Sanitary District Commission, Chicago, 360 tons; a contemplated addition to the Republic Building, Chicago, 700 tons; a large warehouse planned for construction by Carson, Pirie, Scott & Co., Chicago, at Eighteenth street and the river, 5500 tons; for the latter bids are also being taken on reinforced concrete construction, which if selected will reduce the steel required to 500 tons in addition to reinforcing bars. Reports from Western territory indicate the prospective construction of quite a number of large buildings. Plans are under way for four buildings in Denver, Colo., two in Dallas, Texas, one in Austin, Texas, one in Spokane, Wash., two in Salt Lake City, Utah, and one in St. Paul, the steel requirements of all amounting to about 11,000 tons. In addition to these, there is said to be 60,000 tons of bridge material in sight, three of the prospective structures calling for 12,000 tons each. The price of plain material, sagging under the stress of competition, has reached 1.40c., Chicago. Specifications are coming out freely enough to keep rolling schedules well filled.

**Plates.**—Plate orders accompanying structural specifications are providing a large portion of the current business in this line. The demand from other sources is also increasing, and the general situation, so far as volume is concerned, shows steady improvement. Price conditions, however, are not correspondingly satisfactory. The ruling price of 1.45c., Chicago, which has for some time held fairly firm, was last week cut to 1.40c., Chicago, this being now accepted as the minimum.

**Sheets.**—Business for the current month has thus far held practically even with that of the preceding month. Some shading of the recognized schedule of prices has developed, and in some sections of the country is more pronounced than in others. In the West especially there is a good deal of irregularity, which has resulted in liberal concessions. Generally speaking, "f.o.b. Pittsburgh" prices are not being shaded beyond \$1 a ton on black and galvanized sheets.

**Bars.**—The efforts of the mills have been directed more to the securing of orders with specifications than to the booking of forward contracts. There has, however, been a good deal of tonnage entered for delivery up to January 1, and some even beyond that time; but on the latter a premium of at least \$2 a ton has been asked. The aggregate secured by the leading interest is sufficient to assure the active operation of the Bay View mills for some months to come. The settling of prices has lowered the level to a minimum of 1.30c., so that the market is now represented by a quotation of 1.30c. to 1.35c., Chicago. The inside price is more especially applicable to specified orders. The demand for Iron Bars continues light, with prices ranging from 1.27½c. to 1.30c.

**Merchant Pipe.**—Business continues to improve slowly, but the volume coming out is disappointingly small. Being able to secure prompt shipments from the mills, the jobbers are buying only to meet present needs, ordering in carload lots of assorted sizes. Prices are reported to be well maintained.

**Boiler Tubes.**—The demand for merchant tubes is extremely limited. Railroad orders for locomotive tubes, however, are a little more liberal, but trade in both lines is quite unsatisfactory.

**Merchant Steel.**—Specifications from the implement makers have dropped off considerably, and new orders are scarce. The question of requirements for the coming season is now coming up in some cases, but, owing to the reluctance of the mills to book ahead at present prices, not much business of this kind has been taken on. Only a moderate amount of buying in shafting is reported, and the ruling discounts are said to be subject to some shading.

**Cast Iron Pipe.**—Among the municipal lettings advertised are 2000 tons for Salt Lake City, Utah, and 500 tons, more or less, for Dayton, Ohio. The city of Cheyenne is considering the purchase of 5000 tons in addition to the 10,372 tons mentioned in last report as having been placed. We quote, per net ton, Chicago, as follows: Water pipe, 4 in., \$27.50; 6 to 12 in., \$26.50; 16 in. and up, \$24.50, with \$1 extra for gas pipe.

**Metals.**—Although buying has been on a very moderate scale, yet the demand shows a little more activity in cur-

rent requirements. Inquiries for copper for future delivery are growing more plentiful, although holders are not disposed to make commitments beyond 90 days. At the same time, until the market firms up considerably, there is not much inducement for consumers to anticipate their wants. Spelter has scored an advance, and lead is also higher. Trade in old metals still runs in a rut of dullness without appreciable change. Quotations are as follows: Casting copper, 12¾c. to 13c.; lake, 13¼c. to 13½c., in car lots, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, car lots, 31c.; small lots, 33c.; lead, desilverized, 4.15c. to 4.25c., for 50-ton lots; corroding, 4.40c. to 4.50c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; spelter, 5.25c. to 5.35c.; Cookson's antimony, 10½c., and other grades, 9½c. to 10¼c.; sheet zinc is \$6.75, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13c.; copper bottoms, 11¼c.; copper clips, 11c.; red brass, 11¼c.; yellow brass, 9c.; light brass, 7c.; lead pipe, 3.75c.; zinc, 2¼c.; pewter, No. 1, 21c.; tin foil, 23c.; block tin pipe, 26c.

**Old Material.**—The firming up of old material noted last week is gradually becoming more pronounced, having resulted in advances of 25c. to 50c. a ton on several grades. Very little of the railroad material offered last week reached this market, and no buying of round lots is reported. The demand from consumers, however, is broadening, and becoming more general. This is especially noticeable in steel and iron melting stock, inquiries for which have been especially numerous the past week. The general feeling among the dealers is that the reaction noted forecasts a permanent upturn in the course of values. The following prices are per gross ton f.o.b. Chicago:

Old iron rails.....	\$16.25 to \$16.75
Old steel rails, rerolling.....	13.25 to 14.25
Old steel rails, less than 3 ft.....	13.50 to 14.00
Relaying rails, standard sections, sub- ject to inspection.....	22.50 to 23.50
Old car wheels.....	14.50 to 15.00
Heavy melting steel scrap.....	12.50 to 13.00
Frogs, switches and guards, cut apart.....	12.50 to 13.00
Mixed steel.....	10.50 to 11.00

The following quotations are per net ton:

Iron fish plates.....	\$14.50 to \$15.00
Iron car axles.....	17.00 to 17.50
Steel car axles.....	16.00 to 16.50
No. 1 railroad wrought.....	12.00 to 12.50
No. 2 railroad wrought.....	11.50 to 12.00
Springs, knuckles and couplers.....	11.75 to 12.25
Locomotive tires, smooth.....	13.00 to 13.50
No. 1 dealers' forge.....	9.00 to 9.50
Mixed busheling.....	7.50 to 8.00
Iron axle turnings.....	7.00 to 7.50
Soft steel axle turnings.....	6.50 to 7.00
Machine shop turnings.....	6.50 to 7.00
Cast borings.....	5.25 to 5.75
Mixed borings, &c.....	5.25 to 5.75
No. 1 mill.....	7.00 to 7.50
No. 2 mill.....	6.00 to 6.50
No. 1 boilers, cut to sheets and rings.....	8.50 to 9.00
No. 1 cast scrap.....	12.75 to 13.25
Stove plate and light cast scrap.....	11.25 to 11.75
Railroad malleable.....	11.50 to 12.00
Agricultural malleable.....	10.50 to 11.00
Pipes and flues.....	8.50 to 9.00

## Buffalo.

BUFFALO, N. Y., April 20, 1909.

**Pig Iron.**—Consumers are coming into the market with considerable more freedom for most grades of iron, especially for foundry and malleable. Agricultural business is good and the pipe business is improving; also that of the electrical equipment companies and the general jobbing foundries. Railroad business, however, is still very quiet. Most inquiries now are for second half, and the furnaces are commencing to consider and quote prices for such delivery, especially for third quarter. While the prices quoted below, which represent the present quarter, could probably be shaded for early delivery in some instances, this would not be the case to any extent for the second half, furnacemen being very conservative about closing for forward deliveries for less than present ruling prices, believing that the tendency is toward an uplift in the schedule, warranted by improving conditions and increased demand for replenishment of stocks kept low by curtailed buying the past few months. We quote for present quarter, f.o.b. Buffalo:

No. 1 X foundry.....	\$15.75 to \$16.00
No. 2 X foundry.....	15.25 to 15.50
No. 2 plain.....	15.00 to 15.25
No. 3 foundry.....	15.00 to 15.15
Gray forge.....	14.75 to 15.00
Malleable Bessemer.....	15.25 to 16.00
Basic.....	15.25 to 15.50
Charcoal.....	20.00 to 20.50

**Finished Iron and Steel.**—The situation in general shows an improvement in demand, and specifications for bars, plates and structural material continue to come forward in good volume. One or two interests, however, report something of a slowing down on orders, especially for steel bars, caused by further uncertainty on the part of consumers as to whether bottom prices have been reached, a feeling developed by reports of lower prices published during the

past week. The mills and agencies in this territory claim to be maintaining the level some time since established of 1.20c., Pittsburgh, for steel bars, and so far as can be learned no material reductions are being made. It has been reported that extras on bars were being waived in some instances, but this is not confirmed by local mills and sales agents. The principal interest here reports a very heavy business for the week just past in the district covered by the local office, considerably exceeding the aggregate for any of the three weeks preceding, the increase in Canadian business being particularly noticeable. The American Bridge Company secured the contract for the structural steel for an addition to the Brooks plant of the American Locomotive Company, at Dunkirk, about 900 tons, and the Lane Bridge Company was given the contract for the new machine shop which the Ingersoll-Rand Company is erecting at Painted Post, N. Y. The Eastman Kodak Company, Rochester, is having estimates made for a large factory addition involving a considerable tonnage of structural steel, bids for which will be up this week.

**Old Material.**—More inquiry is developing on the part of consumers, but as most of them are disinclined to pay the prices at which dealers are holding, little purchasing is resulting. Dealers are taking a hopeful view of the situation and expect that an improvement in buying will soon take place. We quote as follows, per gross ton, f.o.b. Buffalo, the schedule being largely nominal:

Heavy melting steel scrap.....	\$13.00 to \$13.50
Low phosphorus steel scrap.....	17.50 to 18.00
No. 1 railroad wrought.....	13.25 to 13.75
No. 1 railroad and machinery cast scrap.....	13.50 to 14.00
Old steel axles.....	14.50 to 15.25
Old iron axles.....	17.50 to 18.00
Old car wheels.....	14.00 to 14.25
Railroad malleable.....	12.50 to 13.00
Boiler plate.....	11.00 to 11.25
Locomotive grate bars.....	11.25 to 11.75
Pipe.....	10.00 to 10.50
Wrought iron and soft steel turnings.....	7.00 to 7.50
Clean cast iron borings.....	6.00 to 6.50
No. 1 bushing scrap.....	12.00 to 12.25

## Pittsburgh.

PARK BUILDING, April 21, 1909.—(By Telegraph.)

**Pig Iron.**—Sentiment in the pig iron trade is decidedly better. It is estimated that 250,000 to 300,000 tons have been sold by Southern and Western furnaces in the past week or two. Locally, the demand is not so great, the largest purchase of the week having been 10,000 tons by the Westinghouse Electric & Mfg. Company, part for early delivery and the balance for shipment over the next five or six months—4500 tons for its Cleveland works and 5500 tons for its Allegheny, Pa., works. The price paid was on the basis of \$13.60, at Valley furnace, for No. 2 foundry, but none of the iron is to come from Valley furnaces. The purchase is regarded as a good one, owing to the deliveries and the price. A large Western consumer is in the market for 10,000 to 12,000 tons, none of which will likely go from this district, owing to the heavy freight rates. The General Electric Company is also inquiring for a heavy tonnage. It is believed that the market is at bottom and that a good many consumers are getting ready to cover as far ahead as they can at present prices. We quote Bessemer iron at \$14.75 to \$15; basic, \$14; malleable Bessemer, \$14.25; No. 2 foundry, \$14 to \$14.25, and gray forge, \$13.50, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

**Steel.**—Specifications against contracts for billets and sheet and tin bars are coming in more freely, the leading interest specifying now for close to 100,000 tons a month of sheet and tin bars. Not many new orders are being placed, but we note a sale of 500 tons of small billets for delivery in the Cleveland District at a price \$1 a ton above the price of 4 x 4 in. Regular prices on Bessemer and open hearth billets are \$23 and sheet and tin bars \$25, but there are persistent reports that these prices are shaded.

**Plates.**—The Anaconda Copper Company of Arizona is in the market for 3500 tons of wide sheared plates, to be used in laying a riveted pipe water line in Arizona. The business will likely come to a Pittsburgh mill.

(By Mail.)

General conditions in the steel trade, speaking strictly from the standpoint of new orders, are showing decided betterment, and the belief is becoming more general that the turn for better things has been made. As regards prices, there is no improvement, nor is it expected that they will turn upward much before the latter part of the year, and possibly not until next year. This is evidenced by the fact that leading makers of iron and steel in finished forms are willing to book orders for delivery through second and third quarters at present prices, and in some cases throughout the entire year. Pig iron is decidedly better as regards inquiry. A number of leading consumers are sounding the market for large blocks of iron, but prices are very low, and a large contract for foundry iron has been placed for delivery over the last half of the year at what is regarded as a remarkably low price. Not many new orders for billets, sheet or

tin bars are being placed, but specifications against contracts are coming in quite freely. The American Sheet & Tin Plate Company is now specifying with the Carnegie Steel Company for close to 100,000 tons of sheet and tin bars per month. New orders for finished iron and steel from the heaviest forms down to the smallest articles are increasing, and most concerns are busier in their respective lines than at any time in the past year and a half.

**Ferromanganese.**—One leading seller is particularly aggressive and is naming low prices, taking practically all the business in ferro being offered in this market. We quote foreign 80 per cent. ferro at \$41 to \$41.50, Baltimore, or \$42.95 to \$43.45, Pittsburgh, and note a sale of 25 tons at the latter price. Most sellers are refusing to meet these prices.

**Ferrosilicon.**—A local consumer that bought about 125 tons recently is in the market again for some prompt ferrosilicon. We quote 50 per cent. at \$58, Pittsburgh.

**Rods.**—We quote Bessemer and chain rods at \$29 and open hearth at \$30, Pittsburgh. We are advised that the market is none too strong at these prices.

**Skelep.**—A local consumer is in the market for a fair quantity of steel skelep of light gauges, but the business has not yet been closed. The demand seems to be mostly for grooved and sheared iron skelep, particularly the latter, on which the mills are pretty well filled up. We quote grooved steel skelep at 1.20c. to 1.25c.; sheared steel, 1.30c. to 1.35c.; grooved iron, 1.40c. to 1.45c., and sheared iron, 1.50c. to 1.55c. for ordinary widths, all f.o.b. Pittsburgh.

**Steel Rails.**—The Carnegie Steel Company has booked an order from the Carolina, Clinchfield & Ohio Railroad for 7000 tons of standard sections and another order from the Norfolk & Western for 3000 tons for delivery through the year. The same company has received a contract for about 800 tons of Duquesne splice bars, to be used in the laying of a line in Montana. New orders and specifications against contracts for light rails received by this company last week amount to a little over 1500 tons. Standard sections remain at \$28, at mill, while light rails, 25 to 45 lb., rolled from billets, are \$22 to \$23, and 16 to 20 lb., \$23 to \$24, maker's mill. On rerolled rails these prices might be shaded possibly \$1 a ton. Splice bars are firm, at 1.50c., at mill.

**Plates.**—The Denver & Rio Grande Railroad has placed an order for 1500 steel cars, about equally divided between hoppers and gondolas, with the Pressed Steel Car Company, and the plates and shapes, 15,000 to 18,000 tons, will be rolled by the Carnegie Steel Company. The general demand for plates is fair, and from the boiler shops and other consumers is showing some betterment. The leading plate mills are now running to between 60 and 65 per cent. of capacity. The regular price of plates 1/4-in. and heavier in large lots is 1.25c., or possibly slightly less, and in small lots is 1.30c., Pittsburgh.

**Structural Material.**—Some very large inquiries are in the market and a good deal of new business has been placed. The Buffalo, Rochester & Pittsburgh Railroad is in the market for 2500 tons for bridge work along its line, and bids have gone in on 1200 tons for new steel buildings for the Youngstown Sheet & Tube Company. The McClintic-Marshall Construction Company has taken 400 tons for the Indianapolis Union Railroad for bridge work. The American Bridge Company has taken a pier shed in San Francisco, about 1000 tons, while a local interest has taken 1700 tons for elevated track work at Chicago for the Pennsylvania Lines West. The pier shed for the Boston & Albany Railroad in Boston, 1700 tons, has gone to the Boston Bridge Company. The general price of beams and channels up to 15-in. is pretty firmly established at 1.25c., and in small lots at 1.30c., f.o.b. Pittsburgh.

**Bars.**—Specifications on contracts and new orders for steel bars are coming out quite freely, but as yet little has been done with the implement makers, who are now in the market for their season's requirements, running for a year from July 1. At present none of the bar mills is anxious to sell steel bars at 1.15c. or less for delivery so far ahead. The steel bar trade is somewhat agitated at present over the actions of the leading interest, which is naming relatively low prices, and which has disturbed the market to a considerable extent. The demand for iron bars continues quiet and is mostly in small lots for actual needs. The general price of steel bars seems to have settled down to 1.15c. for ordinary lots, but in exceptional cases and on attractive orders 1.10c. has been done. We quote common iron bars at 1.30c. to 1.35c., Pittsburgh.

**Tin Plate.**—Conditions in the tin plate trade are very satisfactory from the standpoint of orders and specifications against contracts, the canning interests taking in tin plate quite freely, getting ready for the packing season. The leading interest is operating to about 95 per cent. of capacity, and the larger independent tin plate mills are running practically full. We quote 100-lb. cokes at \$3.40, Pittsburgh, and the market seems to be firm.

**Sheets.**—The demand is slowly but steadily increasing, the leading interest operating to about 65 per cent. of capac-

ity, while some of the outside mills are running nearly full. Regular prices on one-pass box annealed black sheets, No. 28 gauge, is 2.20c., and galvanized 3.25c., but prices on corrugated galvanized and roofing sheets are being slightly shaded.

**Hoops and Bands.**—New orders are only for small lots for actual needs, consumers not desiring to contract until satisfied that prices will not be lower. The regular price of hoops remains at 1.60c., and on bands 1.20c., but these prices are being materially shaded on actual business.

**Spelter.**—Prices are distinctly firmer and higher, while the demand is better than for some time. We quote prime grades of Western at 4.90c. to 4.95c., East St. Louis, the freight to Pittsburgh being 12½c., and note a sale of 25 tons at 4.90c. for prompt shipment.

**Railroad Spikes.**—Not many new orders are being placed by the railroads and are still for small lots only to cover repair work. The leading mills have a fair amount of business on their books, most of which was placed some time ago, and against which specifications are coming in quite freely. The demand for smaller sizes continues fairly active and the mills are filled up for four or five weeks ahead. We quote railroad spikes at \$1.65 to \$1.70 for 5½ x 9-16 in. and \$1.75 to \$1.80, base, for the smaller sizes, in carload lots, 5c. additional per keg being charged for small lots.

**Merchant Pipe.**—Mills report that new orders are coming in quite freely, and business entered in April promises to be heavier than in March. Some very large pipe line projects are under way, but they are slow in developing. Inquiries in the market include 375 to 400 miles of 6 and 8 in. for an oil line in Illinois, about 6 miles for an oil line in West Virginia, 12 miles for a gas line in Oklahoma, while a gas line in Buffalo is figuring on an oil line. On the larger sizes of pipe about 6-in. the mills are filled up for some time ahead. The Youngstown Sheet & Tube Company is placing contracts for two or three new pipe mills, which will materially increase its capacity for rolling iron and steel pipe and will allow it to roll up to 24 in. in diameter or larger. The Republic Iron & Steel Company, through its affiliated interest, the Haselton Steel Company, will build a pipe mill at Haselton. We are advised that discounts on both iron and steel pipe are being firmly held, the minimum of the market on steel pipe, ¼ to 6 in., being 76 and 5, and on 4½ to 8 in. iron pipe, 69 and 5, to the largest trade.

**Boiler Tubes.**—The demand for merchant tubes is reported a little better, the boiler shops and other consumers buying more freely than for some time. The railroads are also buying tubes in larger quantities, and while the general tube market is showing some betterment there is still room for further improvement. We are advised that regular discounts are fairly well maintained.

**Iron and Steel Scrap.**—For the first time in some months we can report some betterment in the scrap trade, inquiries being better while prices seem to be hardening. It is stated that dealers are offering as high as \$14.50, Steubenville or Follansbee, for heavy steel scrap without getting it. Dealers quote as follows per gross ton, f.o.b., Pittsburgh: Heavy steel scrap, \$14 to \$14.50; cast iron borings, \$7.50 to \$7.75; bundled sheet scrap, \$10.50 to \$11 at point of shipment; No. 1 cast, \$14 to \$14.50; No. 2, \$12.50 to \$12.75; No. 1 railroad malleable, \$13.25 to \$14; sheet bar crop ends, \$14.50 to \$14.75; low phosphorus melting stock, \$16.50 to \$16.75; rerolling rails, \$13.75 to \$14; steel axles, \$15.75 to \$16; grate bars, \$10.25 to \$10.50; old car wheels, \$14.75 to \$15; machine shop turnings, \$8.75 to \$9; locomotive tires, \$16.50 to \$16.75; locomotive axles, \$22 to \$22.50; iron axles, \$18 to \$18.50; iron rails, \$15.50.

**Coke.**—The demand for both furnace and foundry coke is showing some betterment, and for the first time in many months we can report that prices seem to be a little firmer. Several large inquiries for furnace coke are in the market, one leading interest asking for 10,000 tons a month for delivery over last half of the year, while several of the Valley furnaces are also asking for prices for the same delivery. Standard grades of furnace coke for prompt shipment can still be had from some makers as low as \$1.60 per net ton at oven, but other sellers are holding at \$1.75 and refuse to shade that price. We note a sale of 2000 tons of high grade furnace coke, shipments 20 cars a day, at \$1.75 at oven. The demand for foundry coke is also reported as slightly better, and best grades of 72-hr. for prompt shipment are held at \$1.90 to \$2 a ton at oven. The Westinghouse Electric & Mfg. Company recently placed its contract for foundry coke for the year beginning July 1. On standard grades of furnace coke for delivery over the balance of the year sellers are quoting \$1.80 to \$1.85 per ton at oven.

On May 1 the offices of the Dilworth-Porter Company, Ltd., manufacturer of railroad spikes, will be removed from the German National Bank Building to the works on the South Side, Pittsburgh, the concern having about finished the erection of a three-story office building, 30 x 55 ft. The new building will contain the general offices and the mill

offices, the change being made for the purpose of centralizing operations.

The Pittsburgh Pole & Forge Company, manufacturer of steel trolley and electric light poles, works at Verona, Pa., has opened downtown offices in the Curry Building, Pittsburgh.

## Philadelphia.

PHILADELPHIA, PA., April 20, 1909.

While there is a better feeling regarding the iron and steel situation, actual transactions show no material increase. A considerable tonnage of structural material is under consideration, but none of the large propositions has yet been closed. More interest is being shown in pig iron for delivery over the last half of the year, but sellers are not inclined to quote on heavy quantities, and when forced to do so usually advance the price materially over those prevailing for second quarter delivery. The Eastern Pig Iron Association, the individual members of which are deeply interested in the tariff on pig iron, ore, scrap and coal, will meet again in this city on Wednesday to discuss that question, and will continue to do so twice a month until the matter has been decided.

**Pig Iron.**—Sentimentally the market is considerably stronger, but it has not yet been backed up by any material purchases. There has been more inquiry for foundry grades, and some small and moderate lots have been disposed of for early delivery at prices around \$16.25, delivered, for No. 2 X. Buyers are showing greater interest in iron for forward delivery. Several round lots for delivery over the last half of the year have been asked for, and would no doubt be placed if to-day's prices could be obtained, but sellers, when inclined to accept such business, have increased the price about \$1 a ton, while others are in no way disposed to quote for anything beyond midyear delivery. Not enough business for second quarter shipment has come out to change the ruling quotations. While no fluctuation in prices for such delivery is to be noted, some sellers would no doubt still be willing to shade the price a trifle for desirable business. While no data are available on the amount of stocks being carried on Eastern furnace banks, there is no doubt that there has been a substantial increase, but not sufficient to cause any further curtailment in production. In fact, in some instances producers have decided to remain in blast and pile iron rather than blow out, pending a betterment in the demand. In such cases, however, orders on hand are still quite large, and a good portion of the output can be carried as applying against such orders. There is still considerable business pending in low grade irons, the cast iron pipemakers being in the market for round lots, and some sellers who have recently made sales of these grades have stiffened on prices. But little business has been done in Virginia grades. Sales of scattered lots are reported, prices ranging about 50 cents above those for standard Eastern brands. The demand for forge iron has not been active, some unimportant sales having been made at \$15 to \$15.25, but no large lots have come out. The steelmaking grades show no movement; offerings of basic at \$15, delivered, meet with no response on the part of melters, who as a rule are still pretty well covered for at least the first half of the year, and in some instances considerably beyond that period at their present rate of consumption. Prices are practically unchanged. Basic and low phosphorus grades, in the absence of business, are quoted nominally. For moderate lots of other standard grades, delivery in buyers' yards, eastern Pennsylvania and nearby points during the remainder of the second quarter, the following range of prices is named:

Eastern Pennsylvania, No. 2 X foundry	\$16.25 to \$16.50
Eastern Pennsylvania, No. 2 plain	15.75 to 16.00
Virginia, No. 2 X foundry	16.50 to 16.75
Virginia, No. 2 plain	16.25 to 16.50
Gray forge	15.00 to 15.25
Basic	15.00 to 15.25
Low phosphorus	20.50

**Ferromanganese.**—The market shows no movement. The demand in this territory is at a standstill, and while \$42, Baltimore, is nominally quoted, this price could be shaded on a firm inquiry.

**Billets.**—Small transactions are reported at \$25.40 delivered in this territory for ordinary rolling steel, but no demand for large lots comes out. The same conditions are to be noted in the demand for forging steel, which takes the usual \$2 per ton advance, the customary extras applying.

**Plates.**—Specifications come out fairly well, but do not run into very heavy quantities. New business develops slowly, although there is considerable in sight, several large contracts still pending. More disposition is noted on the part of some buyers to carry increased stocks, but the aggregate coming to the mills does not show any material increase. For small and moderate sized business prices are held pretty firmly at 1.45c. to 1.55c. delivered in this territory, the usual extras applying. On heavy tonnages, however, some concessions might be had.

**Structural Material.**—The general contract for the new

Curtis Building was placed last week with Doyle & Co., contractors; the structural and other material contracts have, however, not yet been placed, but are expected to be made the coming week. Other propositions covering good quantities of structural shapes are still being considered. The business placed during the week has been individually small, although fairly large in the aggregate. More business is in sight, and the outlook is quite good. Prices on plain material continue firm at 1.45c. to 1.55c., according to specification, delivered in this territory; on fabricated work, however, quite low prices are still being named.

**Sheets.**—Transactions continue irregular, and are almost entirely of a spot character. Mills, therefore, show no gains, and have but little work ahead. Quotations are firm and range as follows for prompt deliveries in this territory: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c.; No. 28, 2.80c.

**Bars.**—A little more business has developed which, while not sufficient to increase production, has strengthened the market slightly. Sales continue largely in the nature of prompt lots, as the majority of sellers will not take orders for extended delivery at ruling quotations, which still show some variation, dependent on specification and size. For delivery in this territory the following quotations are named: Refined iron bars, 1.37c. to 1.47c.; common bars, 1.28c. to 1.35c. Steel bars have been more active at 1.30c. to 1.35c. A sale of 2200 tons of concrete bars for work in connection with the city filtration plant was made at a close price.

**Coke.**—Some scattered sales of foundry coke are reported, and prices of the better grades are firmer. There is, however, considerable spot and near future coke which can be had at low prices. Furnace coke is not active, and prices are still weak. The following range of prices continue to be named for delivery in this vicinity:

Connellsville furnace coke.....	\$3.75 to \$3.90
Foundry coke.....	4.15 to 4.40
Mountain furnace coke.....	3.35 to 3.50
Foundry coke.....	3.75 to 4.00

**Old Material.**—The market is somewhat stronger, although recent transactions have been in small lots only. No heavy sales of steel scrap have been made to Eastern mills at the recent price levels, as sellers report that better prices can be realized in Western markets. There is an improved demand for turnings and borings, and prices of these grades show an advance. Quotations, while entirely nominal on many grades, range about as follows for deliveries in buyers' yards, Philadelphia and nearby points:

No. 1 steel scrap and crops.....	\$13.25 to \$13.75
Low phosphorus.....	17.00 to 18.00
Old steel axles.....	17.00 to 17.50
Old iron axles.....	18.00 to 19.00
Old iron rails.....	17.00 to 17.50
Old car wheels.....	14.00 to 15.00
Choice No. 1 R. R. wrought.....	15.25 to 15.75
Machinery cast.....	14.00 to 14.50
Railroad malleable.....	13.00 to 13.50
Wrought iron pipe.....	13.25 to 13.75
No. 1 forge fire scrap.....	12.00 to 12.50
No. 2 light iron.....	8.50 to 9.00
Wrought turnings.....	10.50 to 11.00
Stove plate.....	11.75 to 12.25
Cast borings.....	9.00 to 9.50
Grate bars.....	11.50 to 12.00

## Birmingham.

BIRMINGHAM, ALA., April 19, 1909.

**Pig Iron.**—The records for the past week indicate the sale of a fairly satisfactory tonnage, and that asking prices have strengthened materially. A demand quite in keeping with expectations has been represented, and while buyers in practically all cases have followed a conservative course, the condition of the trade generally has improved, and the outlook is considered brighter than at any time for many months. The prices considered in recent transactions have ranged from \$11 to 12, Birmingham, for No. 2 foundry. The last named figure has applied only to comparatively small lots of favorite brands for prompt shipment, and the \$11 schedule is nearer a criterion of the market value for deliveries during the remainder of the first half and through the third quarter, although only one concern announces its adherence to such a quotation. For last quarter deliveries no figures have recently been elicited. A leading interest quotes \$12 for shipments to extend through the third quarter, and another would only accept tonnage for the third quarter at \$11.50. The smaller concerns are considered practically out of the market for early deliveries and are not solicitous of orders for delivery further advanced. An aggregate of 6000 to 8000 tons of Clifton high manganese iron for shipment commencing immediately is reported sold at figures around \$12.50, Birmingham. The producer of that brand announces a limited tonnage for the third quarter, and does not quote on last quarter shipments. A reported sale of 6000 tons of No. 3 foundry for export is unconfirmed, as is the sale of 2200 tons to a manufacturer of harvesting machinery. The provision to be made by a leading pipe interest has so far taken no definite form and inquiries pending are in the main for comparatively small lots.

A tendency toward a more economical melt is noted, and the off grades are being moved from furnace yards at a rate in excess of the output.

**Cast Iron Pipe.**—No additions to the list of lettings for the near future are reported. The inquiry for small lots is fairly satisfactory, and the orders placed in the past week are attractive in the aggregate. With the exception of one plant, which has been idle for a number of months, the entire Southern producing capacity is in operation, and reports are not indicative of such stocks as to feature in the status of the market. The preparations for extensions and improvements to water works systems are unusually numerous, and the summer months are expected to be very active ones. The developments relative to freight rates on raw material to the Pacific Coast and tariff revision are being awaited with much interest. We quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$26; 8 to 12 in., \$25; over 12 in., average \$24, with \$1 per ton extra for gas pipe.

**Old Material.**—With the preparation by the reorganized Southern Steel Company to put its plants in operation, the outlook is probably more encouraging. The actual market condition has not improved and the movement from dealers' yards is yet at an extremely low rate. We quote dealers' asking prices as follows, which are nominal in the main:

Old iron rails.....	\$13.50 to \$14.00
Old iron axles.....	14.50 to 15.00
Old steel axles.....	12.00 to 12.50
No. 1 railroad wrought.....	12.00 to 12.50
No. 2 railroad wrought.....	10.00 to 10.50
No. 1 country wrought.....	9.00 to 9.50
No. 2 country wrought.....	8.50 to 9.00
No. 1 machinery.....	10.50 to 11.00
Tram car wheels.....	10.50 to 11.00
Standard car wheels.....	12.00 to 12.50
Stove plate and light cast.....	7.50 to 8.00
Cast borings.....	4.00 to 4.50

## Cincinnati.

CINCINNATI, OHIO, April 21, 1909.—(By Telegraph.)

Conditions in the iron and steel trades are improving steadily and reports of the larger interests in finished lines agree that business is all that could be desired under the new prices ruling, save on structural material alone. An important meeting this afternoon of the committee having in charge the foundrymen's annual convention next month showed that the convention will be the largest in the history of the allied organizations, and that the Music Hall exposition buildings will have one of the most interesting exhibits ever gotten together. A feature of the local market in crude iron is the increasing inquiry for last half delivery and the shipping around for bargains on small and medium sized lots for second quarter.

**Pig Iron.**—Some excellent sales have been closed in this market during the past week and the present one has started out well. A general stiffening of prices on the part of the Southern furnaces recognized as the most aggressive in the selling of the past few weeks is a feature, and the chances for securing \$11 iron for even second quarter delivery are narrowing. It is questionable if a buyer could do better than \$11.25, Birmingham, on early business and \$11.50 on third quarter with the Southern interest which has been credited with taking a large part of the business closed in the last few days. For prompt delivery and balance of the second quarter \$11 can still be done on No. 2 Southern, but the majority of the Southern furnace interests are asking \$11.50 and \$12, and some are not negotiating any business at all beyond the third quarter. A heavy selling of iron on southern Ohio yards would be considered the best propulsive force in pushing up the price and possibilities of the Southern product at this juncture, for in this central territory Southern iron has 45 cents per ton the best of it in freights at the quoted prices of \$11.50 on No. 2, against \$14 for southern Ohio, and \$12 would put the Southern iron on the other side. Basic has had an excellent sale in this territory, one lot of 1000 tons going to a northern Ohio melter from a Valley furnace at about \$13.80 for prompt delivery, and another of 3000 to 5000 tons to a north central Ohio steelmaker, and from one Ohio furnace at around \$14. Inquiries from other steelmakers aggregate something like 15,000 tons, two being for 3000 to 5000 tons each and the greater number for last half deliveries. The largest inquiry in this market to-day is for 24,000 tons of Nos. 2, 3 and 4 foundry, deliveries beginning May 1 and through October, from a prominent northern Ohio pipemaker and scheduled to close on Friday next. The International Harvester Company is in the market for a considerable tonnage for the last half. A northern Indiana melter is buying in this market, claiming to have secured some Southern iron for last half at \$11, and to have offers of Northern at \$14, Ironton furnace. For the same delivery for the last half alone Northern furnaces are almost uniformly asking \$14.50 to \$15. There are but five furnaces in the Hanging Rock District now in blast making foundry iron—two Marting, one Belfont, blown in on foundry a week ago; one Wellston, and Hamilton at Hanging Rock. Stocks are said to be in admirable condition to warrant going into the second half with clean order books, and the situa-

tion generally in this district is regarded as promising. For early delivery and to close of second quarter f.o.b. Cincinnati, the freight rate being \$3.25 from Birmingham and \$1.20 from Hanging Rock, we quote as follows:

Southern coke, No. 1 foundry.....	\$14.75 to \$15.25
Southern coke, No. 2 foundry.....	14.25 to 14.75
Southern coke, No. 3 foundry.....	13.75 to 14.25
Southern coke, No. 4 foundry.....	13.50 to 14.00
Southern coke, No. 1 soft.....	14.75 to 15.25
Southern coke, No. 2 soft.....	14.25 to 14.75
Southern coke, gray forge.....	13.75
Southern mottled.....	13.25
Ohio silvery, 8 per cent. silicon.....	19.70
Lake Superior coke, No. 1.....	15.70 to 16.20
Lake Superior coke, No. 2.....	15.20 to 15.70
Lake Superior coke, No. 3.....	14.70 to 15.20
Standard Southern car wheel.....	22.25 to 23.25
Lake Superior car wheel.....	21.75 to 22.75

(By Mail.)

**Coke.**—There is more disposition on the part of foundries to contract for future needs, and agencies report some good forward business in six months' and one year's supply beginning July 1. Furnace grades are quotable from \$1.60 to \$1.90, at oven, on contract, according to kind and delivery. Foundry coke is quoted at \$2 to \$2.35 on contract, with \$2.25 an average price on standard grades for balance of the year. Both the supply and demand for furnace coke are diminishing, in sympathy with the talk of blowing out and banking of furnaces.

**Structural Material.**—Dealers report more specifications and a better feeling in structural material, particularly true of the South, where some good sized orders have been sold recently. The largest factors here maintain that there is no extension of time on the open prices beyond July 1, as claimed, and that the open price of 1.30c., Pittsburgh, is being strictly observed in this territory. It is reported that the Indianapolis City Hall, for which about 2000 tons will be required, and which was held up for several weeks, having been taken out of the hands of its projectors by the court for readjustment of bids, has gone to the Noelcke Richards Company of that city.

**Bars.**—Some good business is reported by all sales agencies here on steel bars, with iron bars lagging. The automobile, vehicle and implement manufacturers are still furnishing some excellent business in steel bars, and denial is made that the price is less than 1.20c., Pittsburgh, although an outside concern is frequently heard of in this connection at 1.10c., and even less.

**Sheets.**—Business is steadily increasing in this territory with the largest interest, and jobbers are showing some anxiety to contract beyond July 1, which, so far as can be learned, has been denied them. Pittsburgh prices are being studiously maintained, and consumers are warned that the increasing demand may send prices up as July 1 approaches.

**Old Material.**—In sympathy with pig iron, there is an improvement in the tone of scrap, and prices have advanced in this market from 25c. to 50c. on almost all items. The strongest item on the list is heavy melting steel, of which there have been some good sales. No. 1 railroad wrought has also been a good seller. All leading dealers have heavy stocks in their yards, having bought steadily during the months of depression. Railroads in this vicinity are cleaning up, and some important lists are expected within a month. The Cincinnati, Hamilton & Dayton will have a list next week. Dealers' prices to the trade, f.o.b. cars Cincinnati, are about as follows:

No. 1 R. R. wrought, net ton.....	\$12.00 to \$13.00
Cast borings, net ton.....	5.50 to 6.00
Heavy melting steel scrap, gross ton...	12.50 to 13.00
Steel turnings, net ton.....	7.00 to 8.00
No. 1 cast scrap, net ton.....	11.00 to 11.50
Burnt cast, net ton.....	8.00 to 8.50
Old iron axles, net ton.....	16.00 to 16.50
Old iron rails, gross ton.....	14.50 to 15.50
Old steel rails, short, gross ton.....	12.00 to 12.50
Old steel rails, long, gross ton.....	12.00 to 12.50
Relaying rails, 56 lb. and up, gross ton...	21.50 to 22.00
Old car wheels, gross ton.....	14.00 to 14.50
Low phosphorus scrap, gross ton.....	13.00 to 13.50

The furnace of the West End Furnace Company, Roanoke, Va., blew out April 18. It was making foundry iron; capacity 125 to 150 tons a day.

The *Farm Implement News*, Masonic Temple, Chicago, has just issued the nineteenth annual volume of the Buyers' Guide, a directory of agricultural implements, vehicles, gasoline engines and other lines sold by implement dealers. The book is alphabetically arranged under the specific articles of manufacture and also under the names of manufacturers by States and post offices. In addition to the convenient means of reference thus afforded, an index to classifications is given, in which each classification is indexed and cross indexed several times. The completeness of the guide makes it exceedingly valuable to those interested in the lines covered.

## Cleveland.

CLEVELAND, OHIO, April 20, 1909.

**Iron Ore.**—With the opening of lake navigation a crisis will soon be reached in the dispute between labor unions and the Lake Carriers' Association over the open shop policy. All the organized men employed aboard the ships have been instructed not to work with nonunion men, except the seamen, and the latter will take a referendum vote on the matter in a few days. Several boats have started out, manned with full crews, and vesselmen do not expect to have any trouble in securing all the men they need. The ice is still solid in the vicinity of the Soo, and it is not expected that boats can get through much before May 1. All the captains of the Pittsburgh Steamship Company have been ordered to report for duty, and the boats will be started in a few days. Additional sales of a few small lots of ore are reported, but there is no indication yet of a general buying movement. Dock shipments have improved somewhat. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

**Pig Iron.**—An active buying movement has been going on in the past week, and local sellers have taken orders aggregating fully 50,000 tons. The greater part of this was foundry iron, but included in the sales were some basic and a fair amount of malleable iron. Most was for second and third quarter delivery, but some sales were for the last half. The buying was by all classes of consumers and not restricted to any territory. The feeling is quite general among consumers that prices are at the bottom and with a possibility of an advance. Some producers who have taken on considerable tonnage are already holding for slightly firmer prices. The sales in this immediate territory during the week were largely No. 3 iron. The largest sale reported was to a local pipemaking plant, 6000 tons for delivery during six months. The price is understood to have been \$14.25 for No. 3, delivered. Another local consumer bought 3000 tons of Nos. 2 and 3 for third quarter delivery. Another pipe-maker has an inquiry out for 4000 tons of No. 3 for delivery to an Ohio plant. A number of other inquiries are pending for both foundry and malleable iron. Some of the large malleable consumers are in the market as well as smaller ones. The sale of a small lot of Southern iron is reported at \$11.50, Birmingham, for No. 2. Local furnaces are slightly firmer on prices and now quote No. 2 foundry at \$15, delivered, Cleveland, and \$14.50 at furnace for outside shipment. We quote No. 2 foundry at \$14.25, Valley furnace. For second and third quarter delivery we quote, delivered, Cleveland, as follows:

Bessemer .....	\$15.90
Northern foundry, No. 1.....	\$15.15 to 15.40
Northern foundry, No. 2.....	14.75 to 15.15
Northern foundry, No. 3.....	14.25 to 14.75
Gray forge.....	13.90 to 14.40
Southern foundry, No. 2.....	15.35 to 15.85
Jackson County silvery, 8 per cent. silicon.....	20.05

**Coke.**—The market is quiet and prices are unchanged. We quote standard Connellsville furnace coke at \$1.50 to \$1.60, at oven, for spot shipment, and \$1.70 to \$1.80 on contract. Standard 72-hr. foundry coke is held at \$1.90 to \$2 for spot shipment, and \$2 to \$2.25 on contract.

**Finished Iron and Steel.**—Stimulated by price concessions the volume of business has increased during the week. The bulk of the tonnage was for steel bars, on which the price is being shaded to 1.15c. and 1.10c., Pittsburgh, the latter price being for desirable orders for immediate shipment. While the prices of plates and shapes are being fairly well maintained, 1.20c., Pittsburgh, is being made in some cases on round lots for immediate shipment. In steel bars, in addition to a large number of small purchases of car lots and under, orders for a few lots running as high as 500 tons have been placed. Only a fair volume of plate business is being placed. The demand for structural material is good, and a number of inquiries are pending. One stock order was placed for 800 tons. The contract for the Bailey Building has been awarded to the Forest City Steel & Iron Company, Cleveland. The order for the structural material, 1000 tons, was placed during the week. An inquiry is out for 400 tons of twisted bars for this building. The contract for the structural steel for the Brotherhood of Locomotive Engineers' Building, Cleveland, 2600 tons, which has been pending for some time, has been placed by the King Bridge Company with the Lackawanna Steel Company. The contract for the erection of the Denison-Harvard bridge, Cleveland, requiring 6300 tons of steel, has not yet been placed by the county commissioners. Architects are preparing plans for the Anisfield Building, Cleveland, which will take about 600 tons. There is a fairly good demand for black sheets and prices are well maintained, but some shading is reported on galvanized sheets. The two local bar iron mills are running, having picked up a fair tonnage in railroad orders. Local mills quote bar iron at 1.20c., Pittsburgh, or 1.30c., Cleveland, but the latter price can probably be shaded to 1.25c., Cleveland. Some orders for forging billets in car lots have been placed at about \$25, Pittsburgh. Jobbers report a very

satisfactory increase in both their mill and warehouse business.

**Old Material.**—While the demand has not yet improved, and prices remain about stationary, a better feeling exists among dealers, who are looking for more activity soon and firmer prices, and are, therefore, refusing to make sales at present prices. As there is not much scrap in the hands of producers, the supply to fill the current demand is well controlled. The sales reported are mostly car lots, but it is believed that some of the mills would buy round lots if they could do so at current prices. Dealers' prices, per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails.....	\$12.50 to \$13.00
Old iron rails.....	15.50 to 16.00
Steel car axles.....	17.00 to 17.50
Old car wheels.....	14.00 to 14.50
Heavy melting steel.....	12.00 to 12.25
Relaying rails, 50 lb. and over.....	21.50 to 22.50
Agricultural malleable.....	11.00 to 11.50
Railroad malleable.....	12.00 to 12.50
Light bundled sheet scrap.....	7.50 to 8.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles.....	\$17.00 to \$17.50
Cast borings.....	6.00 to 6.50
Iron and steel turnings and drillings.....	6.75 to 7.25
Steel axle turnings.....	9.00 to 9.50
No. 1 busheling.....	10.00 to 10.50
No. 1 railroad wrought.....	12.00 to 12.50
No. 1 cast.....	11.50 to 12.00
Stove plate.....	10.00 to 10.50
Bundled tin scrap.....	9.00

## St. Louis.

St. Louis, April 19, 1909.

The St. Louis Board of Equalization reports the official assessed valuation of real estate and personal property in the city to be \$501,707,640, not including railroad, bridge and telephone property, which is estimated at \$36,000,000. The total assessment will yield an income of \$11,937,109.61, based on the same tax rate as last year, \$2.22 on the \$100. The real estate assessments show an increase of \$9,669,770, and the personal property \$2,135,980, while the values of the railroad, street railroad, bridge, telegraph and telephone companies show an increase of approximately \$2,000,000. Under the circumstances of the past year, the total gain is regarded as quite satisfactory. Building operations continue to show a healthy gain. An advance of 15c. per bbl. locally on Portland cement is good evidence of this fact. Conditions are reported to be improving in the iron industry and in kindred trades.

**Coke.**—The market is firmer, with some improvement in the inquiry and in orders for contract coke, on which specifications are being received more freely. There is no price change for the better, though the outlook is more satisfactory. Sales are principally small lots for prompt shipment. We quote spot coke at \$2 for 72-hr. standard foundry Connellsville; for delivery covering 1909, \$2.25. There is an increasing demand for smithing coal.

**Pig Iron.**—Prices are practically 50c. per ton higher. The leading brokers state that round lots of standard Southern brands are not now being offered for forward shipment below \$11.50, Birmingham, though they admit no sales are being made at that figure, except to the buyers who usually order in small lots. In some cases a little iron might be had at \$11 for shipment over April, May and June. Prior to the stiffening of the market and since our last report one house sold 1500 tons; also 1000 tons of 2 to 2½ per cent. silicon for May, June and July shipment, and about 3000 tons of other irons, principally high manganese, for shipment over the second and third quarter. Another leading seller reports having a good many small inquiries up to 500 tons for the last half. A third sales agency states that it finds a decidedly improved feeling among buyers and a growing firmness on the part of producers. A marked feature is more disposition to order out contract iron. It is believed that no resold iron is now being offered—at least not in this market—and that the weak spots have been eliminated. Barring excessive production, the outlook is for an advancing market occasioned by a better demand. It is reported that some furnaces have withdrawn from the market and others are holding for an advance for the last half. We quote for \$2 foundry prompt shipment \$11, Birmingham; last half, \$11.50.

**Finished Iron and Steel.**—There is a moderate demand from fabricators for structural material. Both standard and light rails, however, are dull. In bars, both iron and steel, buying seems to be confined to immediate necessities. This applies to agricultural implement and wagon manufacturers and jobbers. The week has shown some increase in the demand.

**Old Material.**—Dealers report a still firmer market and more inquiry, without, as yet, any further advance in prices. Steel has been showing the most activity, with also a good inquiry for cast scrap and other foundry material. Bar iron is dull. The extra inquiry for steel makes prices for this material the strongest on the list, except relaying rails, for

which there is a big demand, one house reporting a sale of about 2000 tons for the past week, and supplies becoming light. There were no offerings on the part of the railroads last week. The movement is at present largely confined to dealers, but strong consumers continue to enter the market. We quote per gross ton, f.o.b. St. Louis, as follows:

Old iron rails.....	\$14.50 to \$15.00
Old steel rails, rerolling.....	12.50 to 13.00
Old steel rails, less than 3 ft.....	12.00 to 12.50
Relaying rails, standard sections, subject to inspection.....	23.50 to 24.00
Old car wheels.....	13.00 to 13.50
Heavy melting steel scrap.....	12.00 to 12.50
Frogs, switches and guards, cut apart.....	12.00 to 12.50

The following quotations are per net ton:

Iron fish plates.....	\$13.00 to \$13.50
Iron car axles.....	16.50 to 17.00
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	10.50 to 11.00
Railway springs.....	10.00 to 10.50
Locomotive tires, smooth.....	11.50 to 12.00
No. 1 dealers' forge.....	9.00 to 9.50
Mixed borings.....	4.50 to 5.00
No. 1 boilers, cut to sheets and rings.....	7.50 to 8.00
No. 1 cast scrap.....	10.50 to 11.00
Stove pipe and light cast scrap.....	8.00 to 8.50
Railroad malleable.....	8.50 to 9.00
Agricultural malleable.....	8.00 to 8.50
Pipes and flues.....	8.00 to 8.50
Railroad sheet scrap.....	7.50 to 8.00
Railroad grate bars.....	8.50 to 9.00
Machine shop turnings.....	7.00 to 7.50

**Lead, Spelter, &c.**—Lead is in good demand at 4.15c. to 4.17½c. Lead ore is \$28.50 per 1000 lb. base. Spelter is firm and held at 5c. Zinc ore is \$38 per ton Joplin. The outlook in regard to the tariff is imparting firmness to prices on both lead and zinc. Tin is down 25c. per 100 lb.; antimony higher, 30c. per 100 lb.; copper stationary. There has been quite an active market in metals for the week.

## New York.

NEW YORK, April 21, 1909.

**Pig Iron.**—There has been a fair degree of activity, both for moderate lots for prompt delivery and for larger lots for the third and fourth quarters. The majority of sellers decline business at the present level for later deliveries, but some furnaces are booking business forward. The largest inquiry now in the market is for 11,000 tons for a leading electrical concern, but it is believed probable that the Buffalo District will take the bulk of the order. We quote \$16 to \$16.50 for No. 1 Northern foundry, \$15.50 to \$15.75 for No. 2 foundry and \$15 to \$15.50 for No. 2 plain. Alabama iron is quoted \$15.75 to \$16 for No. 1 foundry, and \$15.25 to \$15.50 for No. 2 foundry.

**Steel Rails.**—The Lackawanna Steel Company has sold 6000 tons of rails to the Ann Arbor Railroad and the Illinois Steel Company 4000 tons to the Manistee & Northwestern. The Steel Products Export Company has taken the contract for 13,000 tons for the Guaymas & Yaqui River, a Harriman line, and domestic mills have taken business for Brazil and Panama, the Ensley mill getting 5000 tons for the former, while the Bethlehem Steel Company will send 6000 tons to the Isthmus.

**Structural Material.**—The railroad demand, stimulated by low prices, has been satisfied for the most part, the largest contract yet to come being for the Philadelphia & Reading track elevation at Philadelphia, amounting to about 17,000 tons. The Oregon River & Navigation Company and the Oregon & California may take advantage of present prices to contract for replacing their wooden bridges over the Willamette River, at Portland, Ore., with steel structures. The city of Portland also has under consideration the building of a steel highway bridge over this river. This would require upward of 3000 tons of steel, while the railroad bridges would each mean several thousand tons more than this. In the past week the Pennsylvania Steel Company has closed with the Buffalo, Rochester & Pittsburgh Railroad for 2500 tons of bridge work. The Erie still has some work to let, including a bridge over the Hackensack in New Jersey and a Cuyahoga River bridge at Cleveland, Ohio. The Chicago & Alton opened bids this week for 1500 tons of steel for track elevation. Of the New York Central work referred to last week, there is still 6000 or 7000 tons to be let. On April 17 the Milliken Brothers receivers ceased taking new business, by order of the court. Their bookings in the past week included several buildings in New York, amounting to about 3500 tons, two of these being for Dodd, Mead & Co. and Rogers, Peet & Co. There was also about 2500 tons of galvanized transmission towers and a portion of the New York Central work. At Boston the Leyland line grain elevator, requiring about 5000 tons, is pending, as is the Boston & Albany pier, 1100 tons. The Wisconsin Central has awarded 600 tons of bridge work to the Wisconsin Bridge & Iron Company. It is noticed that a large number of manufacturing buildings are being bid on, an evidence that, while the revival of industry is not rapid, manufacturers are taking advantage of the very low prices for steel and for fabrication to make additions and

reconstruction. These requirements include a very considerable number of 200 to 400 ton contracts. We continue to quote on ordinary shipments of plain material from mill the following prices at tidewater: Beams, channels, angles and zees, 1.46c.; tees, 1.51c. On beams, 18 to 24 in., and angles over 6 in., the extra is 0.10c. Structural material, cut to lengths, is sold in small lots at 1.75c. to 1.90c.

**Bars and Plates.**—Orders in these lines are few and small. Best refined bar iron can now be had at 1.30c., tide-water, although some mills refuse to meet this price, holding at 1.40c. While steel bars are regularly quoted at 1.31c., tide-water, it is understood that considerably lower has been named. Tank and ship plates are quoted at 1.46c., tide-water, on small orders.

**Ferrolloys.**—Some sales of ferromanganese were made lower than \$41, Baltimore, but the market is back to that figure now. The troubles in Turkey may prove to be a factor in this market. An improvement is observed in the price of 50 per cent. ferrosilicon. First hands are not selling at lower than \$60, Pittsburgh. The ice jam in the Niagara River has necessitated the closing down of one plant.

**Cast Iron Pipe.**—The Brooklyn Union Gas Company is in the market for 2500 tons. The City of New York will open bids April 29 on 1000 tons. The general demand is exceedingly light, inquiries being few and only for small lots. Competition continues keen for business originating in this locality, New York contractors having purchased pipe to be applied to work taken some time ago at prices somewhat under anything previously made during this period of depression. Conditions in this locality appear to be less satisfactory than in almost any other section, as foundries elsewhere are well employed, particularly on small sizes. Car-load lots of 6-in. are quoted at \$23.50 per net ton, tide-water.

**Old Material.**—Heavy melting steel scrap is in better demand than anything else in this line, but the largest sale reported was one of 2000 tons for delivery in eastern Pennsylvania within the next 60 days. Next in point of activity are old car wheels, malleable cast and stove plate. The general foundry trade, however, is only buying from hand to mouth. Rolling mills are doing very little, most of them being out of the market. A more cheerful feeling pervades the trade, as inquiries are somewhat better, and it is felt that with the advance of the spring the consumption must improve. It is now a matter of some difficulty to secure the bargains which buyers rather easily obtained two or three weeks ago. Transactions are closely confined to current supplies of old material now coming on the market from railroads and industrial sources, as those who have accumulations of scrap are not disposed to part with them at present rates. Dealers state that almost anything in the list could be sold if they were willing to accept the views of buyers. Quotations are as follows, per gross ton, for New York and vicinity:

Old girder and T-rails for melting	.....	\$10.00 to \$10.50
Heavy melting steel scrap	.....	10.00 to 10.50
Relaying rails	.....	19.50 to 20.00
Old iron rails	.....	14.00 to 14.50
Standard hammered iron car axles	.....	15.00 to 15.50
Old steel car axles	.....	14.50 to 15.00
No. 1 railroad wrought	.....	11.50 to 12.00
Iron track scrap	.....	9.50 to 10.00
No. 1 yard wrought, long	.....	11.50 to 12.00
No. 1 yard wrought, short	.....	10.00 to 10.50
Light iron	.....	6.00 to 6.50
Cast borings	.....	5.50 to 6.00
Wrought turnings	.....	6.00 to 6.50
Wrought pipe	.....	8.50 to 9.00
Old car wheels	.....	13.00 to 13.50
No. 1 heavy cast, broken up	.....	12.50 to 13.00
Stove plate	.....	10.00 to 10.50
Locomotive grate bars	.....	9.50 to 10.00
Malleable cast	.....	11.50 to 12.00

The New York office of the Cambria Steel Company has been removed to the City Investing Building, 165 Broadway.

The receivers of Milliken Brothers, Inc., have removed their offices from the Bowling Green Building, 11 Broadway, New York, to the company's fabricating plant on Staten Island. On Saturday, April 17, the time expired within which new business could be taken by the receivers, by order of the court, and what now remains is to fabricate the business under contract.

The Ridgway Mfg. Company, Ridgway, Pa., is about to put on the market the Elliott mechanical stoker, which not only fires the furnace but also disposes of the ashes automatically. The coal, as it is delivered in the boiler house, is conveyed to the stoker by a spout, and before being put on the fire is ground and thrown on it by two fans. The ashes are dropped from the grate onto a screw conveyor. One advantage is that in the event of the machinery being out of order, the stoker can be operated by hand and a shutdown averted.

## Metal Market.

NEW YORK, April 21, 1909.

**Pig Tin.**—Strenuous efforts are being made by some of the cheapest sellers of tin to bring consumers into the market. The proposed duty on pig tin is being worked for all it is worth, and on Monday of this week a Wall Street paper had a long article on it. This article had been prepared with care, aided, at least, by some one with an intimate knowledge of the trade. On that day a larger business was transacted, larger than in a long time, possibly 400 tons. Of course, more tin is being delivered than is coming in, but stocks April 1 were 3700 tons. Deliveries could easily amount to 4000 tons this month, and still leave a large supply. All the features favoring a higher market are brought out and impressed on buyers. The consuming demand is better, but there is a quantity of unsold tin in London. It was a surprise to many that the London market did not advance more following the good day's business here Monday. It only amounted to 12s. in all, and was nearly all lost to-day. The market there closes at £133 15s. for spot and £134 15s. for futures. The week's range of prices has been as follows:

	Cents.
April 14	29.35 to 29.40
April 15	29.50
April 16	29.40
April 19	29.45 to 29.60
April 20	29.65
April 21	29.55

Some of the low prices have been due to selling on the floor of the exchange by one seller, who apparently wished to make tin look as cheap as possible. An interesting bit of information from London is to the effect that tin from the East carrying a New York freight option is worth a premium.

**Copper.**—Prices are easier. Lake can be had at 12.87½c., electrolytic at 12.62½c. and casting at 12.50c. Consumption is improving, but buyers are very cautious and are unwilling to buy for the future. Some of the wire mills, however, are having a much better business. In Europe the demand is smaller. The exports are large, amounting to 20,884 tons so far this month. The London market closes to-day at £57 2s. 6d. for spot and £57 17s. 6d. for futures.

**Spelter.**—Firmness is evident. The demand is better, in common with a more general request for other metals. Tariff considerations, too, have something to do with the strength of this metal. Much of the spelter used on the Atlantic seaboard is made from Mexican ores smelted here. The tariff bill, now under discussion, provides for a duty of 1c. per pound on the metallic contents of zinc ores. This means that the Mexican ores coming into this country, which have a metallic content of about 35 per cent., will pay a duty of \$7 per ton. It is impossible for smelters to recover the full amount—possibly not more than 85 or 90 per cent. of it. The opinion is held by some that if this provision becomes a law, instead of importing Mexican ores and having them smelted in this country, foreign spelter will be imported. Whether due to this or not, the market is stronger and prices to-day are higher than last week, at 5.07½c. to 5.10c., New York. In St. Louis prime Western brands can be had at 4.95c., although 5c. has been asked.

**Lead.**—Prices are again higher, due to an improved demand. The gratifying thing about this improvement is that the buying comes from makers of cables. This is the largest single use of lead, aside from corroding, and among the recent buyers have been a company making telephone cables, another making cables for electric lighting systems and a third company making a general line. A noticeable improvement is observed in the demand for lead for general purposes. The bottom price for spot lead is 4.25c., and 4.30c. is asked. The American Smelting & Refining Company advanced its quotation to 4.20c. for shipment lead, April 15. The reason buyers are paying higher prices for spot lead is, they want it now.

**Old Metals.**—Consumers are only buying in a small way. Some seem disposed to accumulate such supplies as they can at these levels. Dealers' selling prices are unchanged from last week as follows:

	Cents.
Copper, heavy cut and crucible	12.25 to 12.50
Copper, heavy and wire	12.00 to 12.25
Copper, light and bottoms	11.00 to 11.25
Brass, heavy	9.00 to 9.25
Brass, light	7.00 to 7.25
Heavy machine composition	11.25 to 11.50
Clean brass turnings	8.00 to 8.25
Composition turnings	9.75 to 10.00
Lead, heavy	3.85 to 3.90
Lead, tea	3.60
Zinc scrap	3.62½

**Antimony.**—The talk of a higher duty on antimony has at last raised the quotations. The asking price of Cookson's is 8.50c.; Hallett's, 8c., and other brands, 7.75c. The demand is poor, and, although some importers claim they can bring it over for less, they are afraid to do so because of the artificial market here.

**Tin Plate.**—Business is fair. Prices are unchanged at

\$3.64, New York, and \$3.45, Pittsburgh, for 100 lb. IC coke plates, subject to the usual rebate of 5c. per box on large orders. In Swansea Welsh plates are 1½d. higher at 11s. 7½d.

### Iron and Industrial Stocks.

NEW YORK, April 21, 1909.

Realizing sales as well as strenuous efforts by bears to depress prices resulted in a lower level of values for the greater part of the past week. A recovery set in on Saturday which was continued on Monday and Tuesday. Some of the industrial stocks showed heavy gains during this period, notably International Harvester common, General Electric, Cast Iron Pipe common and Lake Superior Corporation. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com.. 15½-16½	Pressed Steel, pref. 99-100
Allis-Chalm., pref. 47½-51½	Railway Spr., com. 39-40
Beth. Steel, com.. 22-22½	Railway Spr., pref. 99½-100
Beth. Steel, pref. 48½-50	Republic, com.. 22½-22½
Can, com..... 8½-9½	Republic, pref. 74-75
Can, pref..... 75½-79½	Sloss, com..... 74½-76
Car & Fdry, com.. 49½-50½	Pipe, com..... 30½-33
Steel Foundries... 37½-38	Pipe, pref..... 74-75½
Colorado Fuel... 36½-39	U. S. Steel, com.. 49½-52½
General Electric... 156-159½	U. S. Steel, pref.. 113½-114½
Gr. N. ore cert... 68½-69½	Westinghouse Elec. 81-83½
Int. Harv., com.. 79½-84½	Chi. Pneu. Tool... 23-23½
Int. Harv., pref.. 119-120	Am. Ship, pref..... 104½
Locomotive, com.. 52½-56½	Cambria Steel... 35½-35½
Locomotive, pref. 114-114½	Lake Sup. Corp... 24½-29½
Nat. En. & St. com. 14½-15½	Crucible Steel, com.. 7½
Nat. En. & St., pref.... 85	Crucible St., pref.. 59½-60
Pressed Steel, com. 37-38	

Last transactions up to 1.30 p. m. to-day are reported at the following prices: United States Steel common 51¾, preferred 114¾, bonds 104½; Car & Foundry common 49½, preferred 111½; Locomotive common 54½, preferred 115; Colorado Fuel 38; Pressed Steel common 37½, preferred 100; Railway Spring common 39; Republic common 22½, preferred 75; Sloss-Sheffield common 75; Cast Iron Pipe common 32, preferred 76½; Can common 10, preferred 78½.

Philadelphia dispatches refer to the sale to the Robert Fleming Syndicate of London of \$1,000,000 treasury first mortgage collateral bonds and \$2,000,000 3-year 6 per cent. notes of the Lake Superior Corporation. It is said that after paying off bank loans the company will have nearly \$2,500,000 for working capital and for the additions to the plant of the Algoma Steel Company, at Sault Ste. Marie, Ont. A committee of the Board of Directors has visited the plant in the past week, planning for the improvements which are said to consist of a merchant rolling mill and coking plant and an additional blast furnace.

### Iron and Steel Bonds.

Chisholm & Chapman, 18 Wall street, New York, furnish the following quotations:

	Bid.	Asked.
Bethlehem Steel 1st ext. 5s, due January, 1926....	82½	83½
Bethlehem Steel purch. money 6s, August, 1908....	115	118½
Buffalo Iron 5s, October, 1925.....	100	..
Buffalo & Susquehanna Iron 1st 5s, June, 1932.....	98½	..
Buffalo & Susquehanna Iron deb. 5s, January, 1926....	..	98½
Dominion Iron & Steel 5s, July 1929.....	90	92
La Belle Iron 1st 6s, December, 1923.....	103½	106
Lackawanna Steel 1st 5s, April, 1923.....	100	94
Maryland Steel 1st 5s, February, 1922.....	100	..
Penn Steel 1st 5s, November, 1917.....	100	..
Pennsylvania & Maryland Steel 6s, Sept., 1925.....	100	110½
Republic Iron & Steel 1st 5s, October, 1934.....	98½	100
Sloss Iron & Steel 1st 6s, February, 1920.....	94½	95½
Sloss Iron & Steel consol. 4½s, April, 1918.....	..	..
Jones & Laughlin 1st 5s, May, 1939.....	99½	99½

### United States Steel Corporation.

Collateral Trust 5s, Series A, C. E. April, 1951....	114½	115½
Collateral Trust 5s, Series B, D. F. April, 1951....	114½	115½
Sinking Fund 5s, April, 1963.....	103½	104½
Union Steel 1st 5s, December, 1952.....	104½	105
Clairton Steel 5s, 1908-1913.....	100	..
St. Clair Furnace 1st 5s, 1910-1939.....	100	..
St. Clair Steel 1st 5s, 1908-1926.....	100	..
Illinois Steel deb. 5s, January, 1910.....	100½	..
Illinois Steel 5s, April, 1913.....	100½	..

All bonds quoted "and interest."

**Dividends.**—The Pennsylvania Steel Company has declared a semiannual dividend of 3½ per cent. on the preferred stock, payable May 1.

At the annual meeting of the Commercial Club of Chicago the following officers were elected for the ensuing year: President, Theodore W. Robinson; vice-president, Bernard E. Sunny; secretary, Homer A. Stillwell; treasurer, Charles G. Dawes. Two members of the Executive Committee, chosen to serve two years, James B. Forgan and William J. Chalmers. The Reception Committee is headed by Charles L. Strobel.

**A Canadian Plant of the Steel Corporation.**—The map published in connection with the last annual report of the United States Steel Corporation indicates a plant at Hamilton, Ont., belonging to the American Steel &

Wire Company. The fact that a Canadian plant is operated by this company is apparently not generally known in the trade. Reference to preceding annual reports of the Steel Corporation will show, however, that it has been regularly listed among American Steel & Wire Company plants since 1904, under the head of "Barbed Wire and Fence Factories." The rated capacity of the plant is 5000 tons a year of wire fencing, in addition to a small output of staples.

**The Gayley Dry Blast.**—Dispatches received announce that the Gayley dry blast was successfully applied to the two furnaces of the Toledo Furnace Company, Toledo, Ohio, and the Northwestern Iron Company, Mayville, Wis., last week.

A number of labor union leaders, including Samuel Gompers, John Mitchell, Joseph Valentine and James O'Connell, called on President Taft April 16 and had a 2-hr. interview. Matters of national legislation in which the labor unions are interested were discussed, including the 8-hr. bill for Government work, which failed in the last Congress. As to proposed amendments to the anti-trust law, the President said he would consider what ought to be done and that this was perhaps the most important matter under his administration. He would give it full consideration and make a recommendation in his message in December on lines foreshadowed in his inaugural address.

The Forest Service of the United States Department of Agriculture says: It has been estimated that the amount of wood annually consumed in the United States at the present time is 23,000,000,000 cu. ft., while the growth of the forest is only 7,000,000,000 ft. In other words, Americans all over the country are using more than three times as much wood as the forests are producing. The figures are based upon a large number of State and local reports collected by the Government and upon actual measurements.

A statement of the Duluth, Missabe & Northern Railway, one of the Minnesota ore roads of the United States Steel Corporation, shows earnings in 1908 of \$8,115,285, of which \$5,214,479 was net. The outstanding capital stock is \$4,112,500. Dividends of 100 per cent. were paid. In 1907 the dividend was 50 per cent.; in 1906, 40 per cent.; in 1905, 70 per cent., and in 1903, 150 per cent. In 1904, which was a year of large falling off in earnings, the dividend was omitted.

Recent car orders include the following: 1500 steel freight cars for the Western Pacific; 1000 gondola coal cars for the Boston & Maine; 50 steel under frame flat cars for the Pacific Electric Railway, Los Angeles, Cal.; 50 gondola cars for the Iowa Central. The *Railroad Age Gazette* reports that the Norfolk & Western is in the market for 300 freight, the Great Northern for 500 refrigerator cars and the Long Island for 120 steel passenger motor cars.

**The Screw Machine Products Corporation, Providence, R. I.,** which has been well equipped to do all kinds of screw machine work, announces that it now has facilities to do headed, threaded and upset work, these methods being suitable for many varieties of duplicate work ordinarily done on screw machines.

The increase in the annual average of iron ore cargoes loaded at the Duluth, Missab & Northern docks at Duluth, Minn., is shown in a recent compilation. From 1809 tons in 1895 it rose to 3783 tons in 1900, to 6037 tons in 1905 and 8325 tons in 1908.

The La Belle Iron Works, Steubenville, Ohio, and the Wheeling Steel & Iron Company, Wheeling, W. Va., announced reductions last week amounting to about 10 per cent. in the wages of their employees.

J. A. Farrell, president of the United States Steel Products Export Company, has recovered from a critical surgical operation.

### The Minnesota Ore Tonnage Tax Bill Killed.

The iron ore tonnage tax bill passed by the Minnesota Legislature was vetoed by the Governor April 20. It being impossible to pass the bill over his veto, this ends the fight against the Minnesota iron ore mining interests. We are advised on excellent authority that the proposition will probably never come up seriously again.

### Annealing Temperatures and Graphite Formation in Tool Steel.

The proper temperature at which to anneal tool steel is a problem whose solution has been attempted many times, and to which many answers have been made. Another question that has given a good deal of trouble is the condition or conditions that determine the separation of graphitic carbon in cold rolled steel, or high carbon steel rolled to thin sections. This graphite gives the steel a black fracture and it is known as black steel. Very often it is found in file steel of small section, giving black file steel. In a recent book, "Rapid Methods for the Chemical Analysis of Special Steels," &c., C. M. Johnson, chief chemist of the Park Works of the Crucible Steel Company of America, gives the results of his experience on these two subjects.

#### Annealing Temperature.

For plain carbon steels between 0.50 and 1.40 carbon he finds the best annealing temperature to be between 700 and 720 degrees C. (1292 and 1348 degrees F.). Steel that has been reheated and rolled or hammered need not be heated above this temperature, but steel in the cast should first be brought to 850 degrees C. (1562 degrees F.), held there for an hour, and then lowered as quickly as possible to 700 to 720 degrees C. It should be held at this temperature from 10 to 12 hr., and can then be withdrawn and cooled rapidly or slowly.

Most chrome tungsten and chrome molybdenum steels, in other words, most of the high speed tool steels, are also well annealed within the same limits. High manganese and nickel lower the temperature. Hadfield's manganese steel, containing about 12 per cent. of manganese, after annealing for 24 hr. at from 520 to 550 degrees C., could be drilled with a high speed tool, and readily machined on a planer. The steel proved to be remarkably brittle.

#### Formation of Graphitic Carbon.

The formation of the black temper carbon in cold rolled steel he believes to be due entirely to the annealing to which such steel is subjected, the annealing being conducted within such a range of temperature that the combined carbon breaks down. Three different lots of cold rolled steel were subjected to prolonged annealing, and by means of analysis the formation of the graphitic carbon noted.

A black fracture was produced by prolonged annealing between 600 and 700 degrees C. (1112 to 1292 degrees F.). With a carbon from 1.20 and upward it formed most readily, steels with 1 per cent. and under being practically free from it. The temperature most favorable to its formation lies between 660 and 700 degrees C. (1220 to 1292 degrees F.). The reason that black fracture is associated with cold rolling is that steel is worked and repeatedly reheated within the dangerous range of temperature given above. Every precaution should be taken to make the periods of annealing and reheating as short as possible, and when reheatings occur during cold rolling to do this reheating at its lowest practicable temperature.

As a test for annealed steel, the author makes use of the ordinary color carbon determination. After dissolving the drillings in 1:20 nitric acid, the solution is examined by daylight. If the steel is unannealed, the carbon precipitate is flaky and floats in the solution. If the steel is perfectly annealed and has reached the highest degree of softness, the precipitate is in an extremely fine state of division, does not separate in flakes at all, but tends to run up the sides of the tube in a thin film

G. B. W.

### The Canadian Pacific Rail Specification.

A new steel rail specification, designed particularly to provide against the severe weather conditions in Canada, under which track is frozen rigid for long periods, has been prepared by the Canadian Pacific Railway Company. It has in view also the purchase of most, if not all, the rail equipments of this road from the Canadian mills—that of the Dominion Iron & Steel Company at Sydney, Nova Scotia, which produces only basic open hearth rails, and that of the Algoma Steel Company, Sault Ste. Marie, Ont., of which 75 per cent. of the product is Bessemer and 25 per cent. basic open hearth rails. The *Railroad Age Gazette* gives the following data:

The Bessemer rails have only 0.085 phosphorus, and the average carbon is 0.58, and for open hearth steel the upper limit for phosphorus is 0.06 and the lower limit for carbon 0.60. The standard section for new rails on the Canadian Pacific is 85 lb., and this is preferred to the 100-lb. rail on account of the unfavorable experience due to square breaks with the 100-lb. rail having A. S. C. E. section. This decision is based upon the fact that the 80-lb. A. S. C. E. section, having identical chemical composition under the same traffic and like climatic conditions, did not break as frequently. The Canadian Pacific has in track now 85,000 tons of the new 85-lb. rails. In their manufacture it was found that when they approached the saw they were of more even temperature in all parts of the section, the rail head being cooler than in the old section. Therefore a finer grain of steel was produced, having better wearing qualities. The more equal distribution of material between the head and the base simplified the cold straightening to such an extent that it required 40 per cent. less work than the old section with its thin flange and thick head. The straightening of the rails under the cold press seriously impairs their strength and is one of the principal causes of fracture. If the 100-lb. rail had been given the advantage of a better balanced section it also could have been rolled with a cooler head and would have required less cold straightening and given better service.

The Canadian Pacific drop test for open hearth rails is more severe in most of its provisions than those already mentioned. It requires that from each 50-ton heat three rail butts shall be tested, and each butt must be taken from the top end of the first, middle and last ingots cast of each heat. The supports are 4 ft. apart and the height of drop is 20 ft. for the 85-lb. section. If two of the test pieces are not broken and show a deflection of less than  $3\frac{1}{4}$  in. the heat is accepted. If two fail it is rejected. There are no retests and less is left to chance than in most of the rail specifications used in the United States. The practice as to discards in Canada also appears to be more definite and satisfactory than in the United States. After cutting off sufficient to square up the end, at least 12 in. more of seemingly solid steel is cut from that end of the bloom, and if the steel does not then look solid the cutting must continue until it does. In the same specification the drop test for Bessemer rails is 18 ft. and the minimum deflection  $3\frac{1}{4}$  in. A rail butt from every third heat is taken from the top end of the first ingot. If it fails a second test is made and if it fails all rails made from that heat are rejected.

The William B. Pollock Company, Youngstown, Ohio, builder of blast furnaces, rolling mills and heavy steel platework, will make some extensive improvements and additions. Its present blacksmith shop, which is 45 x 167 ft., of steel construction, is being moved from the north side to the south side of the main shop building. An addition 300 ft. long will be erected, making the remodeled building 467 ft. in length. The enlarged shop will have 12 blacksmith fires, which will be an addition of six; 11 flanging fires, which will be an addition of five, and five steam hammers, which will be an addition of two. Other improvements will consist of three hydraulic flanging machines and a full equipment of electric overhead traveling cranes. All of the new machinery has been delivered and is ready for installation.

## The Machinery Trade.

NEW YORK, April 21, 1909.

The demand for machinery held up fairly well the past week, and, while there was no marked increase, the tendency of trade was upward. Merchants talk much more optimistically and are of the belief that a permanent betterment has started. While trade is still rather light, the renewed activity on the part of some of the large industrial corporations and the tendency of those in the market for machinery, or those preparing to build new plants or additions to proceed without delay are having a beneficial effect. More orders and inquiries covering large tools are reported. Since our last report several large industrial projects have come forward that will necessitate the purchase of a great deal of mechanical equipment. Much interest is taken in the announcement that the Boston & Maine Railroad is to start construction this spring of the first of the large group of shops to be erected at East Somerville, Mass. The Lehigh Valley Railroad is withholding the list of tools required for its Sayre, Pa., shops, and in the trade it is stated that it will likely be some weeks before it is sent out for bids. The Delaware & Hudson Railroad is understood to have decided to go ahead with the proposed improvements at Green Island, near Troy, N. Y., and it is said that the list of tools for the new shop will likely be issued shortly. The Delaware, Lackawanna & Western Railroad has been getting further data on the tools on the extensive list issued some time ago.

With the placing of orders for most of the equipment for the Cuban sugar plants, mentioned in these columns some weeks ago, there has been something of a lull in the heavy power equipment line. Mexican mining companies who were buying have also completed their requirements, and inquiries are not, in consequence, as numerous as they were last month. The demand for smaller power equipment continues good, largely because of the activity in the building trade.

The New Burrell-Johnson Iron Company, Yarmouth, N. S., has completed plans for the new machine shop to replace the one recently destroyed by fire, and the principal tools to be installed in the new shop will be a 7 or 8 ft. vertical boring mill, 8-ft. gap lathe, 48-in. heavy engine lathe, 24-in., 20-in., 18-in., two 14-in. and two 10-in. high-speed engine lathes, universal miller, shaper, 10-in. slotter, 72 x 72 in. x 30 ft. planer, 30 in. x 30 in. x 8 ft. planer, 6-ft. and 3-ft. universal radial drills, 4-in. pipe machine, 2-in. bolt cutter, two grinders, power hack saw and a 10-ton traveling crane with 35-ft. span. The new machine shop, plans for which were drawn by Frederick A. Waldron, New York, will be 75 x 80 ft., two stories, of reinforced concrete construction and will be equipped throughout with modern machinery.

The machinery trade will be interested in the announcement that interests connected with the Republic Iron & Steel Company have organized the Haselton Steel Tube Company, which will build a large pipe plant on property recently acquired from the Republic Iron & Steel Company on the Mahoning River, near Youngstown, Ohio. The company will spend about \$1,500,000 on the plant and gas engines will be used throughout with electric drive, according to some inquiries which have been made in the trade. In addition to this a large amount of pipe making machinery will be called for, and the general expenditure in the machinery line will be large.

The York Mfg. Company, York, Pa., manufacturer of ice making and refrigerating machinery, has decided to go ahead with all the improvements to its plant outlined in these columns last December, the entire cost of which will be about \$250,000. About \$100,000 of this amount is to be used for the purchase of modern equipment for the new additions. The new machine shop will be 100 x 230 ft., having a 40-ft. center bay, with 30-ft. galleries on either side. As soon as this building is completed other additions will be built, all of the buildings to be of steel, concrete and brick construction. Last December when the outline of the improvements was noted the company intended only to go ahead with part of the work, but it has now decided to go ahead with the construction of all the buildings contemplated, and expects to have them completed and ready for operation by January 1. The new buildings will give the company 150,000 sq. ft. of additional floor space.

The Texas & Pacific Railroad will rebuild its power house, shops and roundhouse at Dallas, Texas, which were recently destroyed by fire. These were brick structures and the foundations and walls will be utilized in rebuilding. The new machine shop will be 75 x 175 ft., steam boiler house 30 x 60 ft. and there will be a 36-stall roundhouse. The equipment was not badly damaged by the fire.

The Herath & Hultman Mfg. Company, 108 Church

street, Schenectady, N. Y., manufacturer of electric railroad equipment, is open for bids on the following additional machinery to be installed in its plant: Brass furnace and ladle, capacity to melt 150 to 200 lb. to a heat, oil or gas burning; one medium sized shaper, one speed drill press, one speed lathe and one buffing wheel. The company will probably purchase a milling machine later in the year.

The L. C. Smith & Bro. Typewriter Company, East Washington street, Syracuse, N. Y., is having plans prepared for an addition to its plant at Almond and East Washington streets, to be eight stories and basement, 55 x 198 ft., of brick and steel construction. A large quantity of new machinery will be required, the list of which has not as yet been sent out. The new addition is to cost about \$200,000 and contracts covering the construction will be awarded this spring.

The Globe Malleable Iron Works, S. J. Marshall, treasurer and general manager, Greenway avenue, Syracuse, N. Y., will start construction within the next 10 days on extensive improvements to its plant. On the north end of the present plant will be constructed an annealing and shipping room addition, two stories, 100 x 126 ft. On the south end of the plant will be constructed an addition 100 x 126 ft., to be used for additional molding room space. On the east of the present buildings will be erected a wing 26 x 180 ft., which will be used for additional corerom space and for experimental purposes. The company purposes to use part of this building as an experimental room and will equip it with modern apparatus for making various tests and experiments. A new office building is also to be erected which will be one and one-half stories, 50 x 60 ft. Orders have been placed the past week with the Bury Compressor Company, Erie, Pa., for a new air compressor, and with the Foundry Equipment Company, Buffalo, for a new charging truck. The construction of the buildings is to be of steel and concrete, and bids are now being received on a quantity of steel truss work. The only equipment on which the company will receive bids at present, besides the above items for which orders have just been placed, will consist of the following: Three air hoists, capacity 2 tons each; one 2-ton air crane for furnace unloading, two 1-ton electric travelers, 500-ft. runway. The air hoists are to operate on an overhead track system.

Another large refinery is to be built by the Standard Oil Company, for the equipment of which considerable machinery will be purchased. The Standard Oil Company of Louisiana has been incorporated, with a capital stock of \$5,000,000, by F. W. Weller and others connected with the Standard Oil Company, New York, and a large site has been secured in Baton Rouge, La., upon which the refinery will be built. Construction work will be started as soon as the materials can be purchased. The plant will be located on the river and railroad and will refine the oil from the Louisiana fields. Southern headquarters will be in New Orleans.

The Development & Funding Company, Niagara Falls, N. Y., which is making extensive additions to its plant on Buffalo avenue, will require considerable new equipment, including centrifugal pumps, cast iron caustic pots, water tube boilers in 200-hp. units, 800-hp. feed water pump, castings, stack, hoods, breeching, &c., steel tanks, evaporators, dry vacuum pump, barometric condenser, alternating current motor, transformer, mechanical lime hydrators, crusher, screens, bucket elevators and screen conveyor for lime hydrators, heavy package elevators, blowers, fans and a large quantity of miscellaneous supplies. The company is to construct two four-story buildings, 95 x 110 ft. and 48 x 110 ft. respectively, of reinforced concrete, and six other smaller structures for blacksmith and carpenter shop, power plant, &c. Niagara power will be used.

Bids are being received by the Carlisle Construction Company, Carlisle, Pa., W. T. Pascoe, manager, for two 150-kw. generators, two 225-hp. engines and two 235-hp. boilers for the new plant it is to erect for the Cumberland Railroad between Greason and Apherton.

The Seaboard Realty Company, 320 Fifth avenue, New York, has inquiries out for considerable power equipment for the building it is erecting at Sixteenth street and Irving place, New York, for George Borgfeldt & Co., the large importing firm. This equipment will include two 200-kw. generating units, one 125-kw. unit and one 50-kw. unit, and about 1000 hp. of boilers, which will probably be of the return tubular type. Other electrical equipment and freight and passenger elevators will be required.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, April 20, 1909.

Ip machinery and machine tool manufacturing lines trade is neither better nor worse, save perhaps there is noticeable a little more interest in special types of tools, which has been a characteristic of late in this tool market. Orders come in from all sections; more being direct the past few weeks than from the dealers, who seem to be holding off.

For some special machines excellent orders have been received this month, and of milling machines the larger and heavier types are still having a good run, specialists in this line still shipping largely to automobile manufacturers, who seem to be constantly adding to their equipment.

The J. M. Robinson Mfg. Company, manufacturer of metal working machinery, has enjoyed a good run of business since the first of the year. A late example of special forming machinery built by the company is in operation at the fireproof frame department of the Freund Roofing Company, Winton place. It is a power press for light sheets, weighs about 60,000 lb., and is capable of generating about 15 hp. The company built another of the same type for an Omaha concern.

The King Machine Tool Company notes an improvement in its business, the manufacture of boring mills, &c., sufficient to enable it to run five-eighths capacity—full time.

A number of important changes are announced by the Cincinnati Electrical Tool Company, some already effective, others to go into effect after the annual meeting and election to occur this month. President Fred Pentlarge and General Manager Isidor Rauh have retired, and the new president will be L. J. Goldman, the well known clothier and president of the Goldman & Beckman Company, and I. W. Becker is vice-president and general manager. The company has installed a new technical foreman and superintendent. The entire line of tools is to be remodeled and improved, and among some changes in types will be a 3-16 in. and a 2¼ in. drill.

At the office of the United States Electrical Tool Company evidences are seen of improvement, and Vice-President Feltes announces some tests in which its type C electric drill made some records in drilling cast iron under inspection of the Cincinnati Bickford Tool Company. The tool was a ¾-in. type and stood a feed of 0.009 in. per rev. against one in competition of the same size, which stopped drilling the same material at a feed of 0.006 in. per rev. This company is perfecting a heavy angle-plate grinder which is to be announced soon.

At the 151st meeting of the Cincinnati section of the American Chemical Society, April 14, Professor J. J. Porter, of the University of Cincinnati, read a paper on the "Costs in the Manufacture of Iron at Home and Abroad, Considered in Their Relation to the Tariff Problem." Professor Porter attributed the difference in costs in the production of iron and steel in the United States as compared with foreign countries entirely to natural causes.

The Board of Public Service of Painesville, Ohio, has been authorized to purchase the additional machinery necessary for providing light and power to private consumers. The amount appropriated was \$13,350.

Chief Engineer W. C. Perkins, of Ohio, will close bids May 12 for the proposed improvements of the Miami and Erie Canal, for which the State Board of Public Works recently appropriated \$100,000.

The Ralston Steel Car Company, Columbus, Ohio, has offered for subscription \$150,000 of the 6 per cent. preferred stock, the proceeds from the sale of which will be used for expanding the business. The stock is part of the authorized issue of \$400,000 of preferred stock, of which \$225,000 is outstanding.

## Chicago Machinery Market.

CHICAGO, ILL., April 20, 1909.

A more hopeful feeling seems to underlie the general market sentiment, although it must be admitted that it is founded on no very tangible basis. Still it is evident that sooner or later the upturn will come and each succeeding week surely shortens the distance to the desired goal. Spurts of buying are heard of here and there in different sections of the market, but they are too short lived and intermittent to be regarded as significant of a general forward movement. The relatively greater activity observed in structural shops is responsible perhaps for some improvement noted in the demand for fabricating tools, such as punches, shears, &c., but few orders for tools of this class are coming from the boiler and tank shops. A good many of the inquiries for machine tools which are finding their way into the market seem to concern prospective purchases of new equipment, which are apparently being withheld until the tide of improvement sets in more strongly. Recalling the large amount of machinery included in the inquiries withdrawn from the market when trade began to decline in the first half of 1907, it seems fair to assume that the needs thus represented are only temporarily suspended and will again find expression in the buying that will follow the return of normal conditions. The demand for second-hand machine tools is relatively good. A noteworthy transaction in this line included the recent purchase of an entire stock of a Philadelphia concern by a prominent Chicago interest. A considerable portion of this stock, it is understood, will be distributed without removal,

the remainder coming to the company's warehouses here.

The Bettendorf Axle Company, Davenport, Iowa, foundations for whose foundry plant are now being laid, has placed contracts for machinery and equipment, including electric traveling cranes and other equipment, aggregating close to \$50,000. It is reported that the Morgan Engineering Company, Alliance, Ohio, secured the contract for cranes. It is the expectation of the company to have the new foundry ready for operation early in the fall.

The Nye Tool & Machine Works, Chicago, has found it necessary, in order to take care of its growing business, to occupy another floor in the building in which it is located. This room has been equipped with new machinery, largely increasing the output capacity of the plant. In addition to the line of pipe threading machinery heretofore made, a new line of adjustable hand threading tools has been brought out, which will considerably widen the scope of the company's operations. Incidentally, it is stated that the capital stock of the company has been increased from \$25,000 to \$50,000, this step being merely for the purpose of capitalizing a part of an accumulated surplus. It is stated that the orders now in hand are sufficient to keep the works engaged for four months to come.

As a result of reorganization the Seamless Steel Bath Tub Company, Detroit, Mich., has been purchased and succeeded by the Seamless Steel Mfg. Company, newly incorporated with a capital stock of \$600,000. The plant, which has been idle for a year or more, is expected to resume operations with the next 60 days. The factory site contains 8½ acres of ground, and the buildings are furnished with practically new equipment for the manufacture of porcelain enameled seamless tubs. An increase of the capacity of the plant to 500 tubs a day is in contemplation. This step, when taken, will involve the purchase of considerable new equipment.

The Johnson Automobile Company, Marshalltown, Iowa, is preparing to build a new two-story garage, 60 x 120 ft., of fireproof construction, which will be equipped with a repair shop containing a suitable tool equipment.

An extension of the electric road connecting Toledo, Ohio, Ann Arbor and Petersburg, Mich., is contemplated, and it is probable that a branch from this road extending to Tecumseh and Jackson will be constructed within a few months. This project includes the building of an extensive power plant, which will probably be located at Tecumseh. W. E. Niles, Chicago, is largely interested in the road and its prospective development.

The Keystone Driller Company, Beaver Falls, Pa., manufacturer of hand drilling machines and deep well pumps, has opened a branch sales office in the Monadnock Block, Chicago, with E. O. Eyer in charge.

The Consolidated Supply Company, 321 Dearborn street, Chicago, will move to 138 Jackson boulevard, Western Union Building, May 1. The company has been appointed selling agent to all railroads having headquarters in Chicago for the Alamo gas and gasoline engines, manufactured by the Alamo Mfg. Company, Hillsdale, Mich. This engine was exhibited at the Coliseum during the recent Maintenance of Way Association convention, held at Chicago, and created much favorable comment from railroad men. The Alamo Company makes a full line of standard engines for pumping and coaling stations, hoisting outfits, electric light plants, &c.

D. R. & F. A. Cohen, dealers in scrap iron, will move their offices from 607 to 1201-1203 Great Northern Office Building, Chicago.

## Cleveland Machinery Market.

CLEVELAND, OHIO, April 20, 1909.

The machine tool builders and dealers in this territory are still depending on the automobile industry for the bulk of their business. Orders from other sources are mostly for single tools. The general situation shows little change, but hopeful views are expressed regarding the future. The growth of the automobile manufacturing industry in Michigan the past few months has been remarkable. Some large plants have sprung up and others have made extensive additions. While plants making high priced cars have expanded considerably, the large part of the additional plant capacity has been made by companies making medium priced cars. These plants continue to run at their fullest capacity and with the outlook as encouraging as could be wished. Several of the builders of the medium priced automobiles are planning to further increase their next season's output, and will install considerable additional machine tool equipment during the next two or three months. Manufacturers of automobile parts find their plants taxed to their utmost capacity to fill orders, and some new orders placed in the past two weeks have resulted in the placing of rush orders for several additional machine tools.

Some builders of machine tools report a gratifying increase in orders since April 1. Makers of turret lathes and screw machines report considerable improvement in both

domestic and foreign orders, the demand being mostly for medium sized tools. Orders for drill presses have also picked up considerably. While no large inquiries are coming from the railroads, the demand for tools for shop repair work shows some improvement. Little change is noticed in the general manufacturing situation, although orders in some lines are slightly more plentiful. There is a fair demand for second-hand tools, but not many are being placed on the market, purchases by dealers being mostly single tools.

The Merwin Mfg. Company, Cleveland, will enlarge its present capacity by the erection of a two-story addition to its plant, in which will be installed some large new presses and other equipment. This company, which is a comparatively new one, manufactures conductor and gutter pipe, galvanized roll roofing, ridge roll, wash boilers, garbage cans and other sheet metal specialties.

The Forest City Machine Company, Cleveland, recently incorporated with a capitalization of \$25,000, will establish a plant for machine repair work. The incorporators are Willis E. White, J. L. Cochran, H. Bailey and James Farmanek.

The Broughton Bolt Company, Cleveland, which was recently organized, with a capitalization of \$50,000, by John S. Broughton and others, has secured a site at 3420 Hamilton avenue, where a plant is now being equipped for the manufacture of a full line of bolts. The plant will be placed in operation in a few days.

The J. M. & L. A. Osborn Company, Cleveland, has made a large addition to its business by the purchase of the tin plate business of the Bassett-Presley Company, the latter having decided to devote its entire attention to its other jobbing lines. The purchase includes considerable stock and the Bassett-Presley Company's department of tinner's, roofers' and furnacemen's supplies.

The Berger Mfg. Company, Canton, Ohio, has let contracts for the erection of a new galvanizing plant. Two buildings will be erected, one 125 x 300 ft. and the other 100 x 180 ft. The Canton Bridge Company has the contract for the structural iron work.

The Foote-Burt Company, Cleveland, maker of single and multiple spindle drills, reports a satisfactory increase in the volume of its orders. The company is now employing 80 per cent. of its force on full time.

### Milwaukee Machinery Market.

MILWAUKEE, WIS., April 20, 1909.

Milwaukee manufacturers and dealers in machinery are receiving a large number of inquiries calling for detailed plans and estimates. This is encouraging for a good run of business in the near future, but it taxes the facilities of the various engineering departments, and as many of those who ask for figures on equipment merely contemplate its installation at some time within the next few months, there is a disposition to pay less attention to such business than to orders which there is a more immediate prospect of securing. The volume of the latter is gaining over what it has been for three or four weeks past, and indications are that the coming month will witness heavier transactions than any of the current year.

Builders of bridges, viaducts, culverts, &c., as well as structural iron and steel workers, are preparing for an active season, and local firms are in several instances materially extending their field of operations. Invitations to bid on work have been coming in of late from every part of the continent, and some foreign business is in prospect.

The machine tool trade continues rather quiet, being quite irregular. Some concerns, however, report a fair business and manufacturers of specialties seem to be the most active. Orders for motors and controllers to be used with machine tools have increased in number to an extent that hardly seems warranted by existing conditions, but some of this is probably due to the fact that many shops are now changing over to electric drive and adapting it to their old equipment. Another noticeable feature of motor buying is the fact that it runs mostly to the larger sizes, indicating either the use of heavier tools or a growing propensity for group drive, possibly both.

The Badger Brass Company, Kenosha, Wis., states that during the year extensive additions will be made to its plant, but it is not yet in a position to give any specifications for the buildings to be constructed. The manufacturing plants of Kenosha are all in sound condition, and many of them, including T. B. Jeffrey Company, Simmons Mfg. Company and N. R. Allen & Sons Company, are planning improvements to their plants, comprising considerable new machinery. Additional power and electrical equipment will be especially needed, the last named having just purchased a 1000-kw. unit.

The Logemann Brothers Company, Milwaukee, is building a triplex compound pump, with automatic cut-out for the low pressure cylinders, to be used with 800-ton hydraulic press built by the Morgan Engineering Company. This is

a new type, and is of considerable interest from an engineering standpoint.

The Racine Boat Mfg. Company, now of Muskegon, Mich., has been given the contract for a 600-ton Government lightship, a feature of which will be a trussed steel tower in place of spars.

The plant of the Faribault Gas Engine Mfg. Company, Faribault, Minn., which recently burned, will be rebuilt and more extensively equipped.

The Hartley Electric Company, Superior, Wis., has been incorporated by G. E. Dietrich, R. S. Hartley and A. R. Cole.

Contract for the new incineration plant to be built by the city of Milwaukee has been let to the Power Specialty Company, New York.

An up to date sewage system with septic tanks is to be built by the city of West Allis, Wis., on the lines of the one previously constructed at the works of the Allis-Chalmers Company, where the purified water is also made to serve in increasing the economy of the new 10,000-hp. power plant by use for condensing steam.

The Southern Wisconsin Power Company will soon be in the market for additional hydro-electric machinery, if permission is granted by the State to put through another development at Prairie du Sac, Wis., supplementary to the Kilbourn project, which is now being rushed to completion.

The Southern Wyoming Power Company, Laramie, Wyo., has begun work on a new hydro-electric plant, for which heavy purchases of power machinery are to be made.

Copeland & Ryder, Jefferson, Wis., intend to double the capacity of their electric power plant. A new stack 90 ft. high is now being erected.

There is a strong probability that the Chicago & Northwestern Railroad will construct extensive repair shops at Antigo, Wis., to be electrically operated throughout. Should this plan be consummated a large quantity of new machinery will be required.

The Fairbanks-Morse Company contemplates making improvements in its shops at Beloit, Wis., including the erection of a new warehouse.

The National Stamp Vending Machine Company, Los Angeles, Cal., is establishing a branch factory at La Crosse, Wis.

The Manitowoc Clay Products Company has decided to enter upon the manufacture of tile and will install machinery for the purpose.

The Kieckhefer Box Company, Milwaukee, is adding to its electrical equipment. Further improvements are expected to be made within the next few months.

Among recent successful Wisconsin bidders for material to be furnished the Isthmian Canal Commission are the Northwestern Malleable Iron Company and Geo. H. Smith Steel Castings Company, Milwaukee; New Doty Mfg. Company and Rock River Machine Company, Janesville; Sullivan Metallic Packing Company, Baraboo; Simmons Mfg. Company, Janesville; Fairbanks-Morse Company, Beloit, and the Northern Electric branch of the Ft. Wayne Electric Company, Madison.

### New England Machinery Market.

BOSTON, MASS., April 20, 1909.

Indications of improving business are multiplying rapidly. While the machine tool trade is feeling the change to a lesser degree than many other lines, still it has its encouraging features, and both manufacturers and dealers are quite hopeful. Some of the shops are receiving more orders than they have been getting. It is noticed that orders for repair parts are increasing, indicating more active preparations on the part of customers. Some of the automobile builders are showing even greater anxiety to increase capacity. The element of labor is entering into their problems; they are finding it difficult to secure certain types of men, good tool makers being particularly scarce in those places where the factories are located. One great automobile company in placing recent contracts for a large lot of high class lathes held out to the builders the inducement of a greater share of the business if operatives of this character should be furnished with the machines; but it was a condition difficult to comply with. Machine tool orders are no longer confined to a few classes of buyers. They are coming from widely diversified industries, mostly in small lots or as single machines. The foundry business is improving. In Connecticut the hardware manufacturers are a good deal busier as a whole, and the brass business of the Naugatuck Valley is increasing to a marked extent.

Among the diversified metal industries of Hartford, Conn., there has been great improvement in business, taking the average. The Hartford Machine Screw Company is rushed with orders, and not only is running full capacity during the usual working hours, but has been compelled to put on a night shift. The Whitney Mfg. Company, manu-

facturer of driving chains and machine tools, is very busy, the works operating at normal production. The Universal Machine Screw Company has received large orders during the last fortnight, which will keep the shops running at present full capacity for a year. The Pratt & Whitney Company reports an improving demand for its products. The Billings & Spencer Company is receiving increased orders in its drop forging department, not only from the automobile people, but from buyers of standard drop forge products. The Taylor & Fenn Company's works are busier, both in the machine shops and the foundry. The Henry & Wright Mfg. Company has booked orders for as great a number of drill press spindles since January 1 as for the entire 12 months of 1908. Some very good foreign orders for machinery have been received in this vicinity, and other business from Europe and South American countries is being figured. The instances cited above are typical, though so prosperous a showing is by no means universal.

The Taylor & Fenn Company, Hartford, Conn., has added to its line of machinery a manufacturers' drill press known as type C, which is equipped with a power feed of novel design. It has a capacity of drilling holes from 3-16 in. to 3/4 in., with maximum depth of 3 in., and has two rates of speed, of .0071 in. and .0096 in. per revolution of spindle.

The management of the Boston & Maine Railroad announces that the first unit of the great repair shops for East Somerville, Mass., will be erected this spring. The engineers have not decided on the details of dimensions; it will be another week before these are available, but it is settled that the first section of building will be but a comparatively small part of the works, which are planned to take care of both locomotive and car repairs. The new building will be used as a running repair shop and will be equipped with modern machinery. No power plant will be established, electric power being available from the company's central station. Eventually between \$1,500,000 and \$2,000,000 will be expended on this property, the idea being to make it as complete a plant for the purpose as can be organized. Tentative plans for the shops have been making for several years, and doubtless the initial steps toward the erection of buildings would have been taken some time ago had it not been for the business depression. The Boston & Maine announces that it has placed contracts for \$3,000,000 worth of locomotives and cars, in addition to important lots ordered within the year, which are now being delivered.

Of great interest to machinery and manufacturing circles is the announcement of the organization of the Bryant Chucking Grinder Company, Springfield, Vt., with James Hartness, head of the Jones & Lamson Machine Company, as president, and W. L. Bryant as treasurer and manager. The company will build a new machine, the invention of Mr. Bryant, of a type distinct from anything now on the market, known as a chucking grinder. It is a multiple spindle machine, designed to grind all sorts of work, performing both internal and external operations. A new shop will be built immediately, to be 40 x 232 ft. and one story. Though the first machine is now in successful operation, the plan is to proceed deliberately with its development, and the new shop will consequently start in a small way. Mr. Bryant, the inventor, has been associated with the Jones & Lamson Company.

There is an increasing activity in industrial building and it is evident that the total in New England this year will largely exceed that of 1908, which was very moderate. The metal industries are not so well represented in new building as are some other lines. The textile mills are especially active in this respect, but the confidence of manufacturers that they are on the eve of a prosperous period is becoming stronger and is finding evidence in the announcement of expansions, in almost every case conservatively planned, but promising to aggregate a very good market for machinery and supplies. The amount of power equipment that will be needed this year is not small, taking everything into consideration. Some boiler makers are busy. The builders of reciprocating engines complain of the growing popularity of steam turbines for manufacturing plants, a large percentage of the horsepower added recently in this section being of the turbine type. Some of the reciprocating engine people are developing turbines, but there has been some lull in this work during the year past, probably owing to the desire to conserve financial resources.

The Screw Machine Products Corporation, Providence, R. I., is to erect a new plant in that city at Eddy street, Thurber avenue and Blundell street. The building will be one story and will give 30,000 sq. ft. of floor space. The business of the company has increased very rapidly, and coupled with the growing demand is the addition last fall of a heading, threading and slotting department. It was only a few months ago that the business was moved from Clifford street to the larger quarters now occupied at 236 Aborn street, but there is already need of still greater space. The company will have no machinery list in connection with the new plant, but new equipment will be added from time to time. Electric power from outside will be used.

The Traut & Hine Mfg. Company, New Britain, Conn., manufacturer of suspender trimmings, will erect an addi-

tional factory building this season. It will be 60 x 60 ft., one story, with heavy wall to carry additional stories as occasion may demand.

The Warner Bros. Company, Bridgeport, Conn., manufacturer of corsets, is to expend \$250,000 in additions to its works, for which considerable equipment will be needed. A complete new power plant will be established, including engines, boilers, electric equipment, &c. There will be a new building for the steel department, an addition to the box factory and a large addition to the corset factory.

The Standard Metal Works Company, Thompsonville, Conn., manufacturer of pressed metal goods, will build an addition to its works this spring. The company is busy on automobile work, including difficult tubing in which the oxy-acetylene process is employed.

The Waterbury Rolling Mill, Inc., Waterbury, Conn., manufacturer of sheet German silver, has awarded the contract for an addition 32 x 150 ft., one story, of structural steel and brick. The new building will give additional space to take care of increased business and to give room for two more pairs of rolls.

The Brown & Sharpe Mfg. Company, Providence, R. I., has brought out a new grinder, known as the No. 12 plain grinding machine. It is an entirely new size for the company, taking 36 in. between centers and swinging 8 in. in diameter, and has automatic feed. A number of important improvements are embodied in its design.

The Waltham Machine Works, Waltham, Mass., has added to its line a cutter turning and backing-off machine, designed to handle cutters up to 2 1/2 in. in diameter and of 24 in. diametrical pitch, or of coarser pitch in small diameters.

The business of the Williams Typewriter Company, Derby, Conn., will be reorganized as a new corporation under the laws of Connecticut, according to a press dispatch. W. L. Downes has been made permanent receiver of the business under appointment of the Superior Court.

The French Worsted Mills, Hamlet Village, Woonsocket, R. I., is to build large additions to its mills, including a machine shop 40 x 120 ft., one story. In addition a large combing mill and storehouse will be erected.

The business of the International Oil Engine Company, Danielson, Conn., which recently passed into the hands of a receiver, will be taken over by a new corporation, to be known as the American Oil Engine Company, if the usual difficulties attending reorganization can be overcome.

The Bangor & Aroostook Railroad has petitioned the Maine Railroad Commissioners for locations upon which to build important branches of its system. The first would connect at Masardis and extend to Stockholm, a distance of 48 miles; the second would connect Fort Kent and St. Francis Plantation, a distance of 15 miles, while the third would extend from Fort Kent to Van Buren, a distance of 40 miles. The right to build the lines has been given by the Maine Legislature, and it is announced that construction will begin soon after the locations are granted by the Railroad Commissioners.

The Providence Gas Company, Providence, R. I., announces that it will build a new gas plant, with a daily capacity of 3,000,000 cu. ft., to cost \$1,000,000. It will be located at Sassafras Point, on tidewater and the tracks of the New York, New Haven & Hartford Railroad. It is understood in the trade that the contract for the plant complete has been let to Bartlett, Heyward & Co., Baltimore, Md. It includes a large coal handling and storage plant, pumping outfit and the various appliances employed in the manufacture of coal gas.

The North Branford Light, Water & Power Company, Branford, Conn., is in process of organization, the petition for incorporation being now before the Connecticut Legislature. The company proposes to take certain water rights and will develop power. The incorporators include Louis A. Fisk and Charles S. Bradley of Branford.

The Hanlon & Thornton Company, North Attleboro, Mass., has filed a building permit at Woonsocket, R. I., stating that a jewelry factory, employing 200 hands, will be built in that city if 10 years' exemption from taxes is granted.

Important enlargements are promised in general manufacturing, outside of metal industries. A new corporation, the New Bedford Cotton Mill, Inc., New Bedford, Conn., is having plans made for a complete plant. According to the published announcement the main mill will be 130 x 405 ft. and four stories and weave shed 200 x 320 ft., one story. The power plant will operate 80,000 spindles. A. W. Gifford, Worcester, Mass., will build a new factory at Beacon and Jackson streets, 120 x 150 ft. and three stories, to be occupied by the Corset H Company of that city. The Barnard Mfg. Company, Fall River, Mass., will build an addition to one of its mills. The Howard Ramie Fibre Company, Holyoke, Mass., a new industry, will erect a mill in that city 65 x 350 ft. and four stories. E. H. Barnes & Co., New York, will build a silk mill at Central Falls, R. I., consisting of a weave shed 120 x 140 ft., one story, and a power plant. The Arkwright Mills, Fall River, Mass., are considering the building of a second mill, but no decision has

been arrived at. Lee Bros., Athol, Mass., shoe manufacturers, are to add to their factory.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., April 20, 1909.

Betterment is noted in the demand for machinery and tools. While the market is still irregular and spotty, the trade is considerably encouraged with the outlook. Inquiries are reported as very much better; they do not cover any extensive equipment, being still largely single tool propositions, but in the aggregate they reach a very fair total. The demand has broadened quite materially and inquiries come in from quite a wide range of manufacturers, outside of the iron and steel industries. Several merchants report quite an increase in sales recently. Milling machines still lead the demand, one concern reporting sales of four of these tools to different buyers during the past week. Sales of several boring mills, radical and upright drills of the larger sizes, shapers, lathes and special tools are reported by both merchants and manufacturers. In the aggregate the volume of business transacted recently shows quite a fair improvement. Automobile manufacturers still take quite a considerable quantity of tools; in fact, the largest sales have been to those interests. The railroads still withhold business in any quantity, although a few sales of small tools for replacement are reported. Several general equipment propositions of moderate size are under consideration by the trade, but nothing fresh has developed recently in this direction.

Manufacturers of machine tools report practically unchanged conditions. They find inquiries better, but resultant orders are still very much scattered and no material increase in the productive capacity of the larger plants is noted. The smaller establishments, however, are gaining slightly.

An improvement is seen in the second-hand machinery market; there has been more buying, although it is still rather scattered, but the demand has been more active for some classes of metal and woodworking tools, mostly in the medium and smaller sizes. The second-hand boiler and engine trade remains fairly active, with a wide range of business under consideration in the smaller sizes of equipment. Some large propositions in new power installations are being considered. One in particular is that for the new Curtis Building, for which bids have been in hand for a long time, but is expected to be closed shortly, now that the contract for the building itself has been given out.

No particular change is observed in the foundry trade. For some classes of work a better demand prevails, but the rate of output shows no material gain. Outside of castings for textile machinery no material increase in the volume of business coming from the machine tool trade is reported. The steel casting plants still operate on a much restricted basis.

The Philadelphia Storage Battery Company is having estimates made for the erection of a two and a half story factory building and power house, 60 x 200 ft., to be built at 3521 Emerald street. Particulars are not available at this time.

Somers Point, N. J., has decided to erect a municipal electric light plant. Information regarding it may be obtained from John M. Campbell, Mayor.

The Haiback Contracting Company has been awarded the contract for the erection of an office and shop building in Camden, N. J., for the Warren Webster Mfg. Company from plans by Ballinger & Perrot, architects and engineers.

The American Pipe Mfg. Company has taken bids for the erection of a pumping station to be erected at Neshannong Falls, Pa., for the Springfield Consolidated Water Company. The proposed plant will be used for the distribution of water to various towns in that vicinity.

## Government Purchases.

WASHINGTON, D. C., April 20, 1909.

Bids will be received until May 12, at the Treasury Department, Washington, D. C., for heating and ventilating apparatus for the post office and court house at Danville, Ill.

The Chief Signal Officer of the Army, Washington, D. C., will receive bids until April 27 for six gasoline generator sets under a revised specification.

The Isthmian Canal Commission will soon ask bids for four 1-ton, eight 2-ton and one 10-ton pneumatic geared air hoists, rip saw, band saw automatic cut-off machine, post boring machine, joiner, planer, reversible wood boring machine and other supplies.

The following bids were opened April 13 for machinery for the navy yards:

Class 1.—One plate jogging machine—Bidder 7, Alliance Machine Company, Alliance, Ohio, \$4715; 86, Hilles & Jones

Company, Wilmington, Del., \$4394; 123, Morgan Engineering Company, Alliance, Ohio, \$4555; 147, Niles-Bement-Pond Company, New York, \$5183; 240, Bethlehem Steel Company, South Bethlehem, Pa., \$5870.88 and \$5693.04.

Class 2.—Two chain ammunition hoist motors, with spare parts—Bidder 69, General Electric Company, Schenectady, N. Y., \$931.05; 191, B. F. Sturtevant Company, Hyde Park, Mass., \$764.55; 243, Diehl Mfg. Company, Elizabethport, N. J., \$930.

Class 11.—Four dense air ice machines, and parts—Bidder 192, H. B. Roelker, New York, \$32,635; 216, Vermilye & Power, New York, \$39,400.

Class 21.—One vertical drilling machine—Bidder 66, Fairbanks Company, New York, \$722.59; 67, Garvin Machine Company, New York, \$690; 147, Niles-Bement-Pond Company, New York, \$498; 168, Prentiss Tool & Supply Company, New York, \$730 and \$710.

Class 103.—Twelve pneumatic hammers—Bidder 25, Chicago Pneumatic Tool Company, New York, \$30; 36, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$17; 48, Dayton Pneumatic Tool Company, Dayton, Ohio, \$16; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$18.90; 99, Ingersoll-Rand Company, New York, \$10; 160, Pittsburgh Pneumatic Company, Canton, Ohio, \$15; 232, Williams & Wells Company, New York, \$17.

Class 104.—Twelve pneumatic drills—Bidder 25, Chicago Pneumatic Tool Company, New York, \$60; 36, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$41.60; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$48.90; 99, Ingersoll-Rand Company, New York, \$45.

Class 176.—Two portable motor driven grinders—Bidder 65, Fairbanks Company, New York, \$100; 75, R. W. Geldart, New York, \$100; 82, Hisey-Wolf Machine Company, Cincinnati, Ohio, \$100; 111, Knox & Brother, New York, \$100; 133, Manhattan Supply Company, New York, \$100; 136, Montgomery & Co., New York, \$100 and \$91.25; 140, Manning, Maxwell & Moore, New York, \$109; 144, Newport Engineering Works, Newport, R. I., \$99.50; 209, Tucker Tool & Machine Company, New York, \$100 and \$98.

Class 62.—One equipment of coal gear machinery for United States ship Florida—Bidder 1, American Ship Windlass Company, Providence, R. I., \$10,000 and \$7500; 88, Hyde Windlass Company, Bath, Maine, \$11,500 and \$10,300; 119, Lidgerwood Mfg. Company, New York, \$15,122, \$13,800, \$15,512 and \$10,190.

Hiram Weller's Sons, Trenton, N. J., have been awarded contract for power boat and motor for the tender Sunflower at \$730.

The Walworth Mfg. Company, Boston, Mass., has been awarded contract at \$10,923 for the condensing equipment and piping for a 1000-kw. alternator at the New York Navy Yard.

Under bids opened February 9 for machinery for the navy yards the Pratt & Whitney Company, Hartford, Conn., has been awarded class 83, three new model engine lathes, \$1482.75.

Under bids opened March 29, Circular No. 497, for machinery for the Isthmian Canal Commission, the American Hoist & Derrick Company, St. Paul, Minn., has been awarded class 1, one 20-ton locomotive coaling crane, \$13,316.

**The Trenkamp Stove & Mfg. Company.**—A large stove manufacturing plant will be erected in Cleveland, Ohio, by the Trenkamp Stove & Mfg. Company, which has been organized by Herman J. Trenkamp, formerly of the Schneider & Trenkamp Company and more recently secretary of the American Stove Company. Mr. Trenkamp retired from his position with the latter company a short time ago, in order to carry out his plans for the establishment of a new plant. The company, which has been incorporated with a capitalization of \$75,000, has secured a site on Quincy avenue, on which a two-story building, 42 x 225 ft., of mill construction will be erected. The contract for the building has been let, and it is expected that the plant will be ready for operation in June. The company will manufacture a complete line of gas stoves and ranges, and may add other lines later. Contracts have been placed for the necessary factory equipment. The company is now having its patterns made by an outside concern. H. J. Trenkamp is president and treasurer of the new company, B. A. Geurink, recently associated with the Schneider & Trenkamp Division of the American Stove Company, is vice-president, and Henry Trenkamp is secretary.

Aeronautical tests are being resumed at Fort Myer under the general supervision of Gen. James Allen, chief signal officer, and the direct control of the Aeronautical Board. Major George O. Squier is president of the board, and the other members are Major Saltzman, Captain Wallace, Lieutenant Lahm and Lieutenant Foullois. The experimenters have been hampered by the lack of funds for the prosecution of the tests along new lines this year, and will, therefore, confine their operations to practice and training with apparatus already in hand. The Aeronautic Corps of the army, a part of the Signal Corps, has started with tests of a dirigible, and the Wright brothers and A. M. Herring will later conduct tests of their aeroplanes.

# HARDWARE

**A**N insurance policy does not always indemnify a merchant for his loss in a fire. If the policyholder has not performed his part of the contract, by keeping his stock or his property in the condition required in the policy, the insurance company can often deny its liability and refuse to pay; and one of the most important points in connection with insurance, which every merchant should keep in mind, is to leave the insurance company no opportunity to take advantage of such a situation. A fire is a misfortune, but inability to collect the insurance is disastrous and may mean the entire loss of the savings of years which have been invested in a business.

A surprisingly large number of Hardware merchants in small towns carry gasoline, benzine and other dangerous commodities in their stores without having safeguarded their insurance by obtaining formal permits from the agent of the company. Men who have investigated the matter from an insurance point of view say they frequently find dynamite on a shelf in a Hardware store in small towns, where insurance agents are careless in their inspection and there is no rigid fire inspection by municipal authorities. Dynamite is a "contraband" article from an insurance point of view, and the merchant who either secretly or openly carries it in his store is tempting fate and taking a long chance if he ever expects to collect insurance in the event of a fire loss.

The rules of the insurance companies regarding the storage of gasoline and other explosive oils are so strict that in many cases in small towns there is a great temptation to ignore them. It is expensive and troublesome to provide a separate building at the required distance from other property for the storage of these dangerous commodities. The agent may be a good fellow who would not tell tales on his neighbor, and the company might never find it out. The disposition to take chances is an unfortunate trait in human nature which causes an enormous amount of trouble in the world, scarcely second to the amount of trouble caused by neglect of little things like a thorough understanding of the terms of an insurance policy.

A policy is a contract and it contains a list of the articles which the policyholder is forbidden to keep in his stock or on his premises. Many articles which a Hardware dealer must of necessity keep on his shelves are covered by this forbidden list, and to provide for them the insurance company issues a permit which specifies the maximum amount of each article that may be kept in stock at one time. A merchant has no serious difficulty in conforming with the provisions of these permits, and the conditions can be fixed on fair terms so the policy will be good in the event that it is ever needed. It may be possible to save a little in premiums by keeping contraband goods in a dark corner of the basement, but the risk is almost as serious as to have no insurance at all. A fire is a misfortune that may not come when the bank account is large and the bills are all discounted. It is more than likely to come when collections are poor and creditors are writing letters urging the payment of overdue accounts.

Insurance is one of the most beneficent of the institutions of modern commerce. It is so generally recognized as a necessity in business that the prudent wholesale merchant will not extend credit to a customer who does not keep his store and stock protected. Whether conducted by a company or by a mutual association, it is from a broad point of view a co-operative institution. Each policyholder contributes a small sum to a common fund which indemnifies those who sustain a loss, and as a co-operative institution it is necessary that all concerned should deal fairly. The laws which regulate insurance companies are extremely rigid, for the protection of the public and the policyholder, and the man who enters into a contract for insurance should be careful to perform faithfully his part of the agreement.

## Condition of Trade.

Business in general is moving along in fair volume and without special feature beside the conservatism which has for some time characterized it. Reports from some sections of the country are a good deal more cheerful than from others. There is also a good deal of diversity in the experience of individual houses, some of whom are doing a much more satisfactory business than their competitors. This may be explained sometimes by difference of temperament, but is often owing to the different conditions which prevail in the territory cultivated, or the business methods adopted, some of which are much more efficient and successful than are others. The uncertainty regarding tariff legislation is furnishing a more or less sufficient reason for deferring a more aggressive prosecution of business and enterprise. The question of crops is being canvassed and will continue to attract much attention until the harvests are gathered. There are not many important open changes in values of Hardware, but the tendency toward lower values in Wire and Wire products is indicative of a general weakness in heavy goods which have not already declined. While existing conditions give little ground for complaint in view of all the circumstances, there is general agreement that things are working along in the direction of renewed activity and good times, but there is a good deal of diversity in the opinions entertained as to when a decided improvement may be expected. Some express themselves as taking an optimistic view, thinking that business will very soon show a marked improvement, but a more conservative estimate, putting the return of decidedly prosperous conditions a little farther into the future, is more general. With trade in its present volume and without especial financial menace, there is little reason for complaint or apprehension. The conditions fortunately are such as to justify a vigorous and enterprising prosecution of business which should yield a fair return of profit.

### Chicago.

That the volume of trade in Hardware lines is steadily but slowly increasing throughout the Middle West is due more to the unfailing support of agricultural demand than anything else. The conditions prevailing on field and farm contrast sharply with those governing operations in shop and factory. On the one hand is a market broad enough to absorb the full product at constantly rising prices, and on the other a shrunken demand with yielding values. With wheat above \$1.25 a bushel following a fairly bountiful harvest, the farmer is

under no necessity of closely restricting his expenditures for fencing and other improvements. Under these conditions it is only natural that the West, with its broad areas of fertile soil, should constitute an inviting field for trade and one least susceptible to the retarding influences that continue to handicap development in other directions. While comparisons of present results with these of corresponding periods a year ago are not of striking significance, there is nevertheless some encouragement in the fact that the contrasts thus drawn are almost uniformly favorable. A fact, however, that should not be lost sight of in making such comparisons is that the present level of values is, on the whole, considerably lower now than a year ago, and the volume of goods represented by a given sum are proportionately greater now than then. The gradual decline in prices of raw materials used in the manufacture of iron and steel goods is responsible for the downward tendency observed in many finished lines, but it is gratifying to note that such readjustment is drawing near, and in some cases has already reached the bottom limits in this direction. With prices of raw materials moving downward, there is always a disposition on the part of manufacturers to discount the future. Pig iron seems to have halted at \$11 Birmingham, with signs of reaction, which, should it become pronounced, will have a strengthening effect upon cast iron wares. While there is a fairly good demand for sash weights, the price has sagged to \$19, with liberal freight allowances on outside shipments.

### NOTES ON PRICES.

**Wire Nails.**—The tendency toward irregularity in the prices of wire nails and wire, to which reference was made in our last issue, continues and has become somewhat more general. The statement widely published in the daily press to the effect that an official reduction of \$2 per ton had been made is without foundation, and the regularly announced price on wire nails and wire continues as heretofore. Thus wire nails are regularly quoted at \$1.95 to jobbers in carloads at mill, but concessions of 5 cents per keg are frequently made on round lots, and in some cases under the pressure of competition \$1.85 is made to especially desirable customers. While there is not the same effort on the part of manufacturers to hold together in the naming of practically identical prices that there was a short time ago the leading mills are not far apart and the market continues to be fairly sustained with a gradual trend toward lower values. The volume of business is surprisingly good and many of the purchases give the impression that the nails are wanted at once on account of depletion of stocks. There is, however, no disposition to buy beyond early requirements, as it is on all sides conceded that lower prices will probably rule before long. In the present condition of the market and the animated competition which exists the differentials between jobbers and the retail buyers in carload lots, and the additional charge for less than carloads, are not always observed as prescribed in the schedule which is given below. The regular quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days, but are sometimes shaded as stated above:

Carloads, to jobbers.....	\$1.95
Carload lots to retail merchants.....	2.00
Less than carloads to jobbers.....	2.00
Less than carloads to retail merchants.....	2.10

**New York.**—The local market has shaded down slightly as a result of competitive price cutting and receipts of cheap nails, which represent a cost laid down not much above \$2.05 per keg. Business is limited to requirements for immediate use, and is in fair volume. The store price is irregular, but may be represented by a quotation of from \$2.15 to \$2.20 per keg, with something better on car lots.

**Chicago.**—So far as any announced change is concerned, the ruling schedule of prices is at this writing unchanged, and, while this is said to govern transactions in the main in Western territory, some irregularity has developed. The only effect of such concessions as may

have been made seems to be to restrict buying more closely if possible to the actual needs of present consumption. The attitude of jobbers as expressed in correspondence upon the subject with the mills seems to be one of sympathy with the effort being made to defer a revision of prices until the end of the present season at least. Owing to the prevalence of hand to mouth buying, the urgency for prompt shipment of orders is general. Regular quotations are as follows: \$2.13 in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

**Pittsburgh.**—Press dispatches to the effect that the American Steel & Wire Company had made an official reduction of \$2 a ton, or 10 cents per keg, in prices of Wire Nails are denied. The official price of Wire Nails remains at \$1.95 per keg, Pittsburgh, but to meet certain conditions that have arisen several of the leading makers are quietly shading this price 5 cents per keg and in exceptional cases a little more. The trade is still buying Nails very conservatively, expecting at any time that announcement will be made of a reduction in prices, and to be prepared for it stocks are being kept as low as possible. Demand continues to be restricted to small lots to cover actual needs. One leading Wire Nail interest that was a liberal seller some time ago is filled up for this and next month, and is not quoting on business for delivery before June. The regular price remains at \$1.95 a keg, but \$1.90 is being done and slightly less in exceptional cases.

**Cut Nails.**—It would seem that there is a fairly good demand for Cut Nails predicated on the general activity in building. Prices are irregular, 10 cents per keg being commonly conceded beyond established quotations, and the market affords a natural reflection of the uncertainty and weakness in Wire Nails. The nominal price for carloads is still \$1.80 per keg, base, f.o.b. Pittsburgh, for Steel Cut Nails.

**New York.**—Prices are a little better maintained on Cut Nails than on Wire, being on a somewhat lower level. There is considerable activity representing deliveries for early use. The store price is about \$2 per keg, but concessions are made on large lots.

**Chicago.**—The demand for Cut Nails is not noticeably increased. New buying is restricted to small lots required for immediate needs. Prices are irregular and somewhat weaker, reflecting in some measure the growing unsteadiness in Wire Nails. Regular quotations, which are being shaded at least 10 cents a keg, and in some instances even more, perhaps, are as follows: In carload lots to jobbers, Iron Cut Nails, \$2.08; Steel Cut Nails, \$1.98.

**Pittsburgh.**—Demand continues fairly active, but is still confined to small lots for actual needs. There is considerable unevenness in prices of Cut Nails, some mills making lower quotations than others. The official price remains at \$1.80, Pittsburgh, but this is shaded 10 cents a keg, and in some cases more.

**Barb Wire.**—The market continues to exhibit slight irregularities, reflecting the uncertainty in other Wire products. No new business of importance is being placed, but a good general demand is reflected in fair shipments from the mills. Regular quotations, which are shaded from \$1 to \$2 per ton, continue on the following basis, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

**Chicago.**—While the same conditions as noted in Wire Nails operate to prevent buyers from anticipating their needs further ahead than is actually necessary to supply current demand, a fair volume of business is moving. Knowledge of the unsettled condition, reflected by even a limited departure from regular prices, makes jobbers wary of increasing their stocks. Until a new level is established trade will likely be characterized by hand to mouth buying. Regular prices, which are subject to some shading, are as follows: Jobbers, Chicago, car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots,

Painted, \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—Reports of an official reduction of \$2 a ton are denied. It is true, however, that the leading makers are quietly shading prices about \$1 a ton, and in exceptional cases to the large trade slightly more. Buying is restricted to small lots to cover actual needs, and this will likely continue until the trade is satisfied that it is safe to contract ahead. We continue to quote Painted Barb Wire to jobbers in carloads at \$2.05, and Galvanized at \$2.35, but in some cases to the larger trade slightly lower prices are named.

**Plain Wire.**—The market for Plain Wire is in about the same condition and subject to the same influences as already noted under Wire Nails and Barb Wire. Prices to jobbers per 100 lb., in carload lots, are nominally as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

Nos.....	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....	\$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35	
Galvanized.....	2.10	2.15	2.20	2.25	2.35	2.45	2.55	2.65	

**Chicago.**—New orders are limited to small lots to meet current demands, but specifications are coming out fairly well. Any disposition on the part of consumers to order ahead of current requirements is held in check by the doubtful price situation which in the past week has been complicated by some unevenness. We quote regular prices, subject to shading of moderate extent, as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

**Pittsburgh.**—There has been no official reduction of \$2 a ton in prices of Plain Wire, despite press reports to the contrary. The leading makers are giving slight concessions of \$1 a ton and possibly a little more to the large trade, to meet certain conditions. We quote Plain Wire at \$1.75, and galvanized at \$2.05, f.o.b. Pittsburgh, in large lots.

**Nuts.**—While the market on Carriage and Machine Bolts is reasonably well maintained, it is reported that some manufacturers are making concessions beyond the established prices on Nuts. The monthly conference on these products is in session as we go to press.

**Bright Wire Goods.**—Leading manufacturers of Bright Wire Goods have advanced their extreme prices 10 per cent. A discount of 90 and 33 1-3 per cent is obtainable by average trade.

**Wrought Goods.**—Slightly lower quotations on Wrought Hooks, Hoops and Staples, &c., are shown by a new discount sheet recently issued by one manufacturer.

**Builders' Hardware.**—Prices on Builders' Hardware are a shade stiffer and demand in many localities is good as a result of the large amount of building, either going on or projected.

**Sandpaper.**—The tone of the Sandpaper market is not quite as firm as for some time past, although important concessions are not reported. Purchases on the part of the larger trade are in reduced volume.

**Linseed Oil.**—Business is still of a quiet and routine character, with no perceptible change in quotations, although competition for the little trade offering is somewhat keen. Regular quotations in 5-bbl. lots continue as follows: State and Western Raw, 55 cents per gallon; City Raw, 56 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—During the week the price advanced to 43 cents, owing to the strong position at Savannah. The past day or two, however, has developed an easier tone with a slight falling off in demand. The New York market is represented by the following prices: Oil Barrels, 41½ to 42 cents; Machine Made Barrels, 42 to 42½ cents per gallon.

**Window Glass.**—No improvement is to be noted in the situation as reported last week. The demand continues of small proportions and in the struggle for busi-

ness offering some of the hand operated factories have met the abnormally low figures made by the American Window Glass Company, 90 and 40 per cent. discount on single and 90, 40 and 10 per cent. discount on double strength, and it is intimated have gone 2½ per cent. better in a few instances. Much dissatisfaction exists among the workmen over the low wages ruling, and one or two plants have closed down on account of complaints. No definite announcement has yet been issued in regard to the Imperial Window Glass project, but its consummation in the near future is regarded by some well-informed parties in the trade as probable. Eastern jobbers are holding glass at 90 and 35 per cent. discount on single and 90 and 40 per cent. on double, with little business being done.

### "Dictated but Not Reread."

**D**OUTLESS all our readers are familiar with the statement "this letter was dictated, but not reread," or something to the same effect, which appears so often nowadays in connection with business correspondence. Just what this is intended to stand for is the subject of brief but caustic comment in a recent issue of "The Silent Partner," a house organ published in the interest of the Globe Machine & Stamping Company, Cleveland, Ohio, which meets with the hearty approval and indorsement of a well-known Hardware merchant who brings the matter to our attention. It runs as follows:

Does it mean that if the letter says something that is not so or makes a quotation that isn't right, or is wrong in some particular, please blame the stenographer and not me?

The Silent Partner believes that the use of such phrases is undignified and childish. If a man gets so busy that he cannot read the letters he sends out, why doesn't he pick out a stenographer he can bet on and let it go at that? Or else why not let subordinates dictate?

Or is the stamped phrase meant to insinuate that the firm is so darn busy that it cannot stop to read letters after they are written? The Silent Partner gives it up.

**THE HOOPESTON HORSE NAIL COMPANY**, Hoopston, Ill., after a fire-loss sustained in December last year, has finished the rebuilding of its factory. A brilliant reception held in the factory marked its formal opening and the resumption of work. Fully 300 people were in attendance, and by a profusion of electric light, decorations and music the usual humdrum scene of industry was for the time transformed into a ballroom, at the end of which gleamed the company's trademark wrought in electric lights. Souvenirs of the occasion in the form of hat and scarf pins bearing the trademark were distributed among the guests. The plant which is now ready for operation will practically double the capacity of the old one, and it is stated that it will begin work with 10 months' orders on the books.

**THE GILLETTE SAFETY RAZOR COMPANY**, 18 Tremont street, Boston, Mass., has just issued a handsome catalogue illustrating and describing a new line of Gillette Safety Razors, pocket edition, in addition to the Standard Gillette Safety Razor in the various sets and combinations, together with a group of new Gillette Shaving Brushes and Gillette Shaving Soap. The pocket edition Safety Razor and case is furnished in 15 styles and finishes.

**THE JOSEPH WOODWELL COMPANY**, Pittsburgh, Pa., has leased the three-story building at 203 Wood street, adjoining its present location, and will occupy it as soon as repairs and alterations have been made. The business of this Hardware jobbing concern has increased rapidly in the last few years, making larger quarters imperative.

**RUSSELL HARDWARE COMPANY**, Lebanon, Va., has opened a Hardware, Stove, Saddlery and Heating store, having bought the Hardware business of the Henrice-Hendricks Mercantile Company.

## A CONVENIENT VEHICLE AND HARNESS DEPARTMENT.

THE GRANBY HARDWARE & IMPLEMENT COMPANY, Granby, Mo., enjoys a large Vehicle and Harness business, which, as is generally the case, has grown in proportion to the increased attention and space devoted to it. The unusually convenient and commodious accommodations designed for this department are shown in the accompanying illustration. It is on the main floor of the store, which has a ceiling 18 ft. high, the balcony being 9½ ft. above the floor. The store is 130 ft. long and the balcony extends its entire length. A 7 x 12 ft. elevator runs up through the balcony, a portion of which is devoted to surplus sample Vehicles. Other Vehicles are kept under the balcony. Harness and strap work is sampled on the balcony, where Horse Collars are also kept, as shown, and in the proper season Lap Robes and Horse Blankets are displayed on the balcony railing. The opposite side of the store is devoted to Shelf Hardware. A private railroad track to



Vehicle and Harness Department of the Granby Hardware & Implement Company.

the building eliminates drayage and permits handling goods at a minimum cost. The building is heated by steam and lighted by a gas machine. There is a drilled well in the basement with pump and 150 ft. of 1-in. linen Hose to give partial protection from fire originating either within or without. A stream of water can be put on any part of the building or can be thrown on the roof to prevent its taking fire.

THE neat emblem reproduced herewith appears on the envelopes, letterheads and invoices of the Tracy, Robinson & Williams Company, Hartford, Conn., which carries on an extensive business in Hardware, Mill Supplies, &c. It is also used from time to time in the firm's newspaper advertising. The emblem is an effective reminder of the company's business, and also enforces the fact that quality is a prime consideration with the store.



U. S. SHACKLETT, treasurer and manager of the Shacklett-Thomas Hardware Company, Fulton, Ky., has disposed of his interest in that concern and taken a position as traveling sales manager for the Norvell-Shapleigh Hardware Company, St. Louis, Mo. Mr. Shacklett is a Hardwareman of experience and ability and has taken a conspicuous part in association work, having been president of the Kentucky organization.

## A BROKEN WINDOW.

THE window illustrated herewith is not broken, but is given that appearance by the ingenuity of the Josey Hardware Company, Scotland Neck, N. C. The effect was obtained by taking a sheet of common window glass, 24 x 30, and breaking it by striking it about the middle with a Hammer, making a hole big enough for a brick to go through. The broken parts were then put



Looks Like a Broken Window.

up against the plate glass in the show window, using small strips of sticks to keep the parts together and hold them to the window pane.

Various advertising ideas will suggest themselves in connection with a broken window. In this case a brick was placed 2 or 3 ft. from the glass inside the window as if it had stopped there when thrown. In the rear was displayed a big sign offering a reward for the "man who threw the brick," illustrated by five \$5 bills. The "persuader" referred to Revolvers, which with Cartridges, &c., were arranged on the floor of the window.

THE HARDWARE business of Herbert T. Clark, Willimantic, Conn., has been incorporated under Connecticut laws as the Clark-Hurley Company, with capital stock of \$12,000. The incorporators are Herbert T. Clark, James H. Hurley and Clara C. Clark. The business has been conducted by Mr. Clark for 11 years. Mr. Hurley has been connected with the Jordan Hardware Company for 18 years, and now leaves that company to ally his interests with those of Mr. Clark. The company will do a general Hardware business as in the past.

T. J. REDMOND of Craig, Mo., has purchased the stock of L. C. Ahlborn, Kensington, Kan., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Paints, Sporting Goods and Harness under the style of Thomas J. Redmond Hardware Company.

THE FORT WAYNE REFRIGERATOR COMPANY, Fort Wayne, Ind., manufacturer of Pearl Steel Glass Refrigerators, is moving into a plant which will afford 30,000 sq. ft. of floor space, in addition to a separate office building. The new quarters will be occupied in about two weeks.

THE PHOENIX SOAPSTONE COMPANY, 7 Warren street, New York, quarriers and manufacturers of Phoenix Soapstone, for laundry trays, sinks and all kinds of structural work, Arrington, Va., will, on or about May 1, remove its New York office to the Morton Building, 110-116 Nassau street.

W. A. DUNLAP, R. A. McCamman and R. G. McNutt have engaged in business in Maryville, Tenn., and will carry Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods and Vehicles. A new building will be occupied.

PERSINGER & JEWETT have purchased the Hardware business of W. W. Young, Lodge Pole, Neb.

## The Merchant's Advertising Copy.

**Must Be Honest—Wives' Judgment Valuable But the "Man Behind" the Best Guide—Fixed Appropriation Not Advisable.**

BY CLARFIELD.

THE question is frequently asked, "What kind of advertising copy should I use?" It is a difficult question to answer specifically because scarcely any two businesses can be treated by exactly the same methods. The character of business handled, the local conditions, the store and the merchant himself are all influencing factors in the correct solution of this problem.

### As Compared With Buying Goods.

A good business man would not make or buy goods for stock simply because they were cheap, or because he liked them or his wife preferred them for home use. His experienced judgment must tell him that he can sell them at a profit, otherwise his chief end in business is not accomplished.

### How Is It With Your Advertising?

What is its chief object? To attract attention? To look well? To read well? Simply to appear in half a dozen papers? To please you?

Unless it brings back the money that it cost and a profit besides, it fails of its aim.

### General Points Worth Remembering.

There are general rules, of course, which can be applied to all advertising. In the first place, advertising must be honest. Usually it is best to express it in plain, simple language. Naturally, if it is honest it will be backed up to the letter in the store; not simply by giving the goods advertised exactly as represented, but also by giving the best possible store service, prompt deliveries and courteous attention at all times.

### The Right Standard of Judging.

Although many a good business man will not buy goods simply because they are cheap and because he likes them or his wife prefers them, still many good business men permit themselves to be influenced by these reasons in their advertising.

Some use space because it is cheap, without reference to its value. Some insist upon advertising copy that pleases them, irrespective of its pulling qualities.

### Advertise to Please Their Wives.

There are also some good business men who will not use advertising copy or media that do not please their

wives. Generally speaking, this is a very good principle to follow, because a great deal of advertising copy has of necessity to be planned to appeal to women. Therefore a woman's advance judgment upon its appealing force is usually valuable.

However, some instances have been known where such a course has reacted to the disadvantage of a business. If the woman whose judgment is sought is one who is accustomed to wealth and the more exclusive social surroundings, she will more than likely advise the use of style and language in advertising which will not under any circumstances influence the popular minds of the middle classes. Therefore, unless the store appeals entirely to the most exclusive kind of trade, the larger part of the advertising effort will be lost.

### Must Appeal to the Majority.

All things considered, it is usually best to be guided by the judgment of the man behind the business. If he has built up the business himself, he will recognize at once that what appeals to him or his friends may not influence the minds of the great majority of his customers.

If local merchants could only be brought to realize that the merchant princes of the country who do a business running into the millions every year spend hours every day upon this department of their business, it would not take them long to understand that behind this sort of effort there must be placed the same careful thought and attention that is given to their buying and selling within the store.

### A Fixed Amount Set Aside

for each week or month or year is not usually the most advisable way of meeting this problem. Emergencies are certain to arise wherein a larger amount will be needed during some periods of the year than during others, and on the other hand, local or general trade conditions may develop which will make it inadvisable at certain periods to spend as much as was originally planned.

## Weaver Hardware Company's Special Sales.

THE Weaver Hardware Company, Rochester, N. Y., has been making a feature of Saturday and Monday special sales, which have proved very effective in attracting and holding the attention of the community and bringing customers into the store. The plan of extending the sale through Monday is particularly interesting, as it has been successful in reaching a class of trade who desire to avoid the crowd of Saturday shoppers. In connection with these sales many

**You Can Look for These Sales Each Week**

and always find something you want at MONEY-SAVING PRICES

**SALE FOR NOVEMBER 7th AND 9th, 1908.**

"AT THE  
OLD  
HARDWARE  
CORNER"  
81-83  
Main Street East

**Saturday and Monday  
SPECIAL SALE**

**SAVE THE DIFFERENCE.**

Agricultural  
implements  
No. 1 August 21  
1908

**Heavy  
Galvanized Washtubs**

25-in. size, 45¢. Cut from 50¢.  
22-in. size, 35¢. Cut from 40¢.  
24-in. size, 55¢. Cut from 60¢.

**Cornus Double Roasters**

Made from heavy  
steel and heavily  
enameled, to hold 10-  
pound roast. Roastable.

**\$1.38**

**Russwin  
Food  
Choppers**

No. 1 65¢. No. 2 95¢.  
No. 3 81-85.

Russwin Food Choppers are the best  
because the cone opens up wide and can  
be easily moved and stirred. The cutter  
turns in the dish and prevents  
drifting. Four knives are  
equipped with each machine to  
cut, grate, and pulverize and  
is made and better. The cut-  
ters are nickel plated, all  
other parts heavily enamel. A  
Russwin Cook Book goes with  
every machine. They are  
better than any machine made.

**Gen  
Postal  
Scales.**

Capacity 1 pound  
Gives instantly  
weight and postage  
rate of any class of mail mat-  
ter. A great desk convenience.

**78c**

**Elyria Knife  
Sharpeners**

**Rambos Handic Brams**

The original and best Rambo  
brams made. Cut 1908

**29c**

**Twentieth  
Century  
Wash**

**Intelligent Advertising Ideas**

are put into effect and are used to make the advertisements distinctive, as may be noted by referring to the accompanying announcement of one of the company's sales. One of these features is the phrase, "Save the Difference," which is used in every ad.

Another, is the method of printing the address in circles at the top of the advertisement on either side, a simple but effective method of marking the company's printed matter.

A point is also made of always having about the same newspaper location.

The advertisements are set up a day or two in advance of their appearance, and a thousand or more copies are run off, which are circulated to good advantage, being put on all the store counters and sent out with packages and in mail. Thus the sales are given the greatest possible publicity in advance.

**Advance Circulars.****Leaders and Prices.**

In selecting leaders for the sales and making prices, attention is paid to the season of the year, as well as to inside considerations, such as quantity of stock on hand,

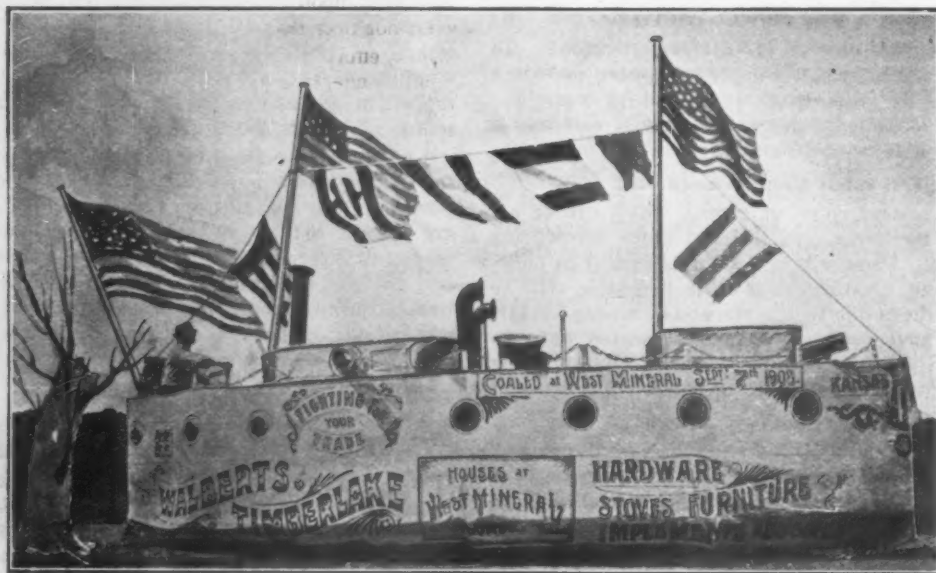
**A BATTLESHIP IN KANSAS.**

**She Coaled at West Mineral and Then Laid a Course Through the Town on Parade—Clever Float of Walberts & Timberlake—A Broadside of Tin Cups.**

**W**ALBERTS & TIMBERLAKE, who operate Hardware and Implement houses at Columbus and West Mineral, Kan., had a most original and interesting float in a recent street parade at West Mineral. It was in the form of a battleship, as illustrated herewith, and was named after the real battleship Kansas, now in commission. The most interesting feature of the affair was that the ship actually moved and gave forth broadsides of Tin Cups, which were thrown into the crowd through lengths of Stove Pipe protruding through turrets to represent Guns, a Gun being shot off inside the ship whenever a Cup was thrown. This Kansas was

**No Toy Affair.**

being 30 ft. long, 6 ft. wide and 6½ ft. high. The framework was made of 1 x 4 boards, 16 ft. long, bent into the shape of a boat and vertically braced by short lengths of the same, except at the ends and center,



*She Coaled at West Mineral.*

probable course of prices, and the like. The company has a large House Furnishing and specialty department, and there is always something in this line to attract the ladies.

There is also something every week under the heading, "On the Tool Table."

**Excellent Results**

have been obtained from these sales, which have become an established feature of the company's business. To a very large extent they represent cash business. They bring hundreds of people to the store who, in addition to the articles advertised, buy other things at regular prices. They also get in the habit of visiting the Weaver establishment.

Of course, the leaders are marked down very low on sale days, but the volume of sales which would not otherwise be secured helps to make up the profits.

As an example, it may be stated that on a tool for which the average demand amounts to 3 or 4 dozen a year, 10 dozen were disposed of in one sale. Occasionally some one is found who objects to paying regular prices for articles which he has purchased or seen advertised at a much lower figure, but he is usually satisfied by a frank explanation of the principles and considerations governing the sales, especially since department stores and others have educated the public to the idea of special prices for a limited time.

**Reduced Profits Increased Volume.**

where 2 x 4 boards were used, bolted with washers to keep them from splitting. The entire framework was covered with white builders' paper and again covered with bleached muslin, upon which the signs shown in the illustration were printed. Small Bathtubs were hung at the davits for boats.

**The Ship Was Propelled by One Horse Power,**

a horse being harnessed inside the body and hitched by a pair of buggy shafts to two wheels in the center of the boat. Under the circumstances the horse had to have a gentle disposition and one was secured which made no trouble from the start to the finish of the parade. There was a rudder at the stern operated by a man at a steering wheel. Other members of the crew which handled the ship included two boys to throw the Tin Cups, two men to fire the Guns and an engineer, who drove the horse. All these men rode on the boat and had ample room to move around, except the man at the wheel, who had his hands full steering and giving orders.

There were two masts 14 ft. above the main part of the boat on which large American flags were carried, another one being flung to the breeze on a flagpole at the stern. In addition to these flags the ship was dressed with the flags of several foreign nations—Ireland, Scotland, Great Britain, Austria, Germany, France and Italy. These were used out of compliment to the large number of foreigners who live in this section. West Mineral is the center of a coal producing district, and the sign, "Coaled at West Mineral," made a hit with the crowd.

**A Trail of Smoke.**

Among other interesting details regarding the construction of the ship, it may be stated that the smoke stacks as well as the guns were made of common 7-in. stove pipe, enameled black with stove enamel, with ordinary stove pipe collars at the top, which were slipped down to the head and then crimped to make them look like the real thing. The ventilators were much the same except that 7-in. elbows were used. The port holes were also made of stove pipe collars. A small tinner's firepot was placed under the smoke stacks burning asphalt or tar and making dense black smoke which belched forth from the stacks and was carried off by the breeze.

## MAKING GOOD IN BUSINESS

HINTS AND SUGGESTIONS FROM MANY SOURCES

**T**HE men who have achieved success are the men who have worked, read, thought more than was absolutely necessary, who have not been content with knowledge sufficient for the present need, but who have sought additional knowledge and stored it away for the emergency reserve. It is the superfluous labor that equips a man for everything that counts most in life.

*Cushman K. Davis.*

**A Good Beginning.****Prompt Acceptance of a Difficult Mission—Tact and Persistence in Its Accomplishment.**

Readiness cheerfully to go anywhere at a moment's notice and at whatever personal inconvenience, to remain absent from home for any length of time that the exigencies of business may demand, and to make the interests of the employer his own, is a most appreciated quality in an employee. It never fails to secure appreciation. A turning point of this kind in my own experience so aptly illustrates this observation that its introduction here may be pardonable.

In those early days travel by rail was a positive hardship compared with present conditions. Sleeping cars were unknown, and trains jolted over rough roadbeds at snail pace. It took 24 hr. to go from Chicago to the Missouri River, and the most active young man was not anxious to leave his home and suffer the inconvenience and hard knocks of such a trip. One day, however, I was called into Mr. Leiter's office and asked if I would go out to a distant prairie town and attempt the collection of a bill of \$1400 against a country merchant. That meant much more then than it would now, and, although I realized the responsibility of the mission and its difficulties and hardships, I promptly and cheerfully accepted the proposal.

From the moment I took the train I had no other thought than that of accomplishing the object for which I had been sent. I determined to get that money, no matter how long I had to stay for it, or how much hard work or inconvenience might be involved.

Arriving at the little village, I found a representative of another wholesale house, to which the merchant was indebted in the amount of \$4000, had been there before me, looked the ground over and left on the next train, abandoning his mission as hopeless for the time being.

I was not "making trains," and frankly told the storekeeper that I had come to stay until I could go away with the firm's money in my pocket. When he grasped the situation he disclosed all his private business affairs

to me, and I found he owned the local grain elevator, the hay scales and other "outside deals." Then I secured from him an option on these, went to other men in the town and disposed of them. This reduced his account by several hundred dollars.

Then I made a list of the accounts he held against farmers and other residents, secured the notes of the most responsible debtors and discounted their paper at the bank. Finally, I took back to Chicago a number of pieces of valuable dress goods of which the merchant had an overstock. All these things satisfied the claim which I had been sent to collect.

It was a proud moment for me when I went into Mr. Leiter's private office and gave an account of my week in the prairie town collecting a bad debt. The trip had a strong and direct influence on my advancement. It taught me a lesson, and if it may do as much for any young man of to-day its narration is justified.

*H. N. Higinbotham.*

**Path to Success.**

I venture to utter a word of caution to business men: Let them study their own affairs frankly and face the truth. If their methods are extravagant, let them realize the facts and act accordingly. One cannot successfully go against natural tendencies, and it is folly to fail to recognize them.

There is no mystery in business success. The underlying and essential element of success is to follow the established laws of high-class dealing. Keep to broad, sure lines, and study them to be certain they are correct ones. Watch the natural operations of trade and keep within them.—*J. D. Rockefeller.*

**How to Get a Job.**

Walter Ward Biller tells the following story about a Hardware store in St. Louis, which advertised for an errand boy, says *Judge*. As it happened, the boss was talking to a customer when the boy came in. Thinking he wanted to buy something, he excused himself, and, going over to the boy, asked him what he could do for him. The boy told him he came in answer to his advertisement, and asked for the job.

Well, of course, the boss got mad for being disturbed while he was talking to a customer. He said to the boy: "You go outside and walk a block. If I call you back, why, I will hire you; if I don't, why, you just keep right on walking."

The boy did as he was told, but, going out, he picked up a Shovel that was standing near the door, put it on his back, and started down the street.

Before he had gone 10 ft., the old man was after him, yelling, "Come back! Come back!"

The boy came back, took off his coat, and asked where he wanted him to work—downstairs or upstairs, or where?

The man took one good look at him and said: "I guess I'll hire you. Never mind putting your coat on. Start right in."

**Death of Martin F. Connors.**

**M**ARTIN F. CONNORS, secretary of the William Connors Paint Mfg. Company, Troy, N. Y., died at his home Saturday, April 10, from an attack of pleuro-pneumonia. He was born in Troy, educated in the local schools and afterward entered the employ of his brother, William Connors, in the paint manufacturing business. He was identified with the Troy Lodge of Elks, Knights of Columbus, Automobile Club of Albany, was treasurer of the Fritch Chemical Company and proprietor of the *Evening Standard* of Troy. Mr. Connors was a man of ability, a public-spirited and influential citizen, and was held in very high esteem in the community in which he was a conspicuous figure.

The Hardware, Stove, Paint, Implement and Sporting Goods store of P. H. Renwan, Prairie Home, Neb., has been destroyed by fire.

## Good Roads a Vital Necessity.

BY GEORGE W. COOLEY, STATE ENGINEER OF MINNESOTA.

As is well known, it is an axiom in business affairs that the consumer pays the freight; to the cost of production is added the cost of transportation, and this cost is not borne by the producer, who simply adds it to the price to be realized at the market; nor by the middleman, on whose books it is entered only as a factor in the cost; but we who purchase these products realize that we have paid not only a fair price for the product and a fair profit on the necessary investment, but also an additional and sometimes an exorbitant sum for the delivery of that product to our house or store. So we find that there are three parties interested to a greater or less extent in this proposition: The producer, who adds it to the cost of production; the middleman, who adds it to the selling price, getting his commission on such charges as part of the cost; and the consumer, who finally pays the entire bill.

According to the State census of 1905 we find that the urban population comprises 53 per cent. of the whole population of the State, and on this portion of the population falls the greater cost of increased transportation due to a defective system of highways. It has been shown that the

### Average Cost of Transportation

over the primary highways of the State is approximately 25 cents per ton per mile, which cost might be reduced fully one-half by an improved system of roads. It has been further shown that the consumption of native product hauled over our roads to consumers in this State amounts to over 2500 tons daily, hauled on an average of 10 miles.

This means an annual outlay at the cost of transportation alone of \$2,293,750. Now if one-half of this can be saved by improving our avenues of transportation we would have a fund of over \$1,000,000 annually, which the urban part, or 53 per cent. of the population, could afford to contribute annually for good roads.

### Annual Tax Levy.

The law under which the Highway Commission is at present working provides for an annual tax levy of one-twentieth of a mill, which, with other resources, provides a fund of about \$75,000 annually, which is required to be distributed among the different counties in such a manner that no county shall receive more than 3 per cent. nor less than one-half of 1 per cent. of that amount. But as the tax is distributed over the State on the basis of assessed valuation, and as the three richer counties pay respectively 18, 12 and 10 per cent. of the total fund, it follows that some counties must contribute a much greater amount than they can receive, the excess going to the poorer counties, who in many cases receive much more even at the minimum allotment than they pay into the fund.

This is the fundamental principle of State aid, and is the basis of all legislation looking to a betterment of the highway system of the country, for it places upon the 53 per cent. of the population a portion of the burden of building roads in which they have only the benefit of a reduction of a certain portion of the cost of produce to them.

### What Other States Are Doing.

The necessity for a better highway system, an improvement in methods of construction and maintenance, and a realization of the principle that those who benefit by any such improvement should help bear the burden of the cost has prompted the inauguration of the plan of State aid in a large number of States, who are now contributing to such purposes from 33 1-3 to 100 per cent. of the cost of roads built under State supervision.

New Jersey and Minnesota each pay one-third of such cost, the total amount limited by legislative appropriation. New Hampshire, Delaware, Ohio, New York, Washington, Virginia and Vermont each pay half. Massachusetts and Pennsylvania each pay three-quarters, and under certain conditions Vermont, California, Colorado and New Mexico pay the entire cost, and each of these States make annual appropriations varying from \$50,000 in the smaller States to \$5,000,000 in New York. Other States have contributed

liberally in furnishing road material or labor of convicts. No mere sentiment has prompted this action on the part of half the States, but rather it has been looked upon as a good business proposition, a reduction in the cost of transportation meaning a reduction in the cost of living, thus adding to the comfort and convenience of the merchant and the mechanic, the capitalist and the laborer.

### European Farmers Market Produce at One-Third Our Cost.

To show the vast importance of this movement to the people I ask attention to a few statements of facts culled from the investigations made by those who have devoted many years in research along these lines. The average cost of transportation on our primary highways is 25 cents per ton per mile, and at that cost fully 95 per cent. of the product of the country is carried. The price paid for moving a bushel of wheat 12 miles, from the field to the market, would cover the freightage from New York to Liverpool and back; but with this disadvantage that the wheat could only be moved on land when the roads were in good condition. It has been estimated that the farmers of Europe market their produce at one-third the cost that obtains in this country, and they are able on most of the roads of France, Germany, England and other European countries to avail themselves of the advantage of hauling maximum loads 365 days in the year.

So great is the burden laid upon the people of this country by a bad road system that the statement is now hardly doubted that the cost to our whole people for transportation by wagon is no less than \$500,000,000 annually, more than it would be had we such a system of highways as during the past 50 years has been constructed and maintained throughout Continental Europe.

### Maintenance an Important Consideration.


It has often been said that the intelligence of a people may be measured by the excellence of their highways. We cannot subscribe to this principle. The rapid growth of our country, especially of the great West and of this State, during the past 50 years has defied our best efforts to keep pace with its development. Even among nations with hundreds of years of history to look back upon, with their magnificent system of highways, no such advance has been made in their highway systems as this nation has experienced during the past 15 or 20 years. At the Paris road convention held last year, the general opinion seemed to be that France, the nation of good roads, could teach us little or nothing new in road construction, and that the true secret of the excellence of foreign highways consisted, not so much in their construction as in their admirable system of maintenance.

It would be difficult to invent or construct any piece of mechanism which on completion might be turned over to the operator with the assurance that it would run forever without further thought or care, but such a policy, unwise and expensive though it may be, seems to govern us in our road system, and we find a lamentable lack of authority in our laws for their proper care and maintenance.

### Co-operation and Government Supervision.

We have learned that all civilized nations having a suitable highway system have obtained it through the co-operation and under the supervision of the government, and we have profited by this knowledge in applying the principle of State aid. We have also learned that their excellence is due to their methods of repair under government supervision, and it behooves us to be guided by their experience in this most essential part of the general plan.

"PAINT MODERNISM" is the title of a publication which has lately been inaugurated under the direction of the educational and commercial section of the Bureau of Promotion and Development, Paint Manufacturers' Association of the United States. The booklet is attractively printed and supplies effective arguments in favor of the use of machine made paint. It is accompanied by an interesting pamphlet, "Why Paint Peels," by G. B. Heckel, containing illustrations, explanation, caution and advice for painters, merchants, salesmen, architects and property owners. Copies of both publications may be obtained from the Bureau of Promotion and Development, the Bourse, Philadelphia, Pa.



## THE QUESTION BOX

This department is open for the discussion of questions which arise in the practical conduct of the Hardware business. Our readers are invited to contribute, submitting inquiries or answering questions.

Correspondents are expected to give their names and addresses, but in order to encourage frank expressions of opinion the advice of our correspondents will be treated in confidence, names and addresses not being published.

For convenience Questions or Answers should be addressed to THE IRON AGE QUESTION BOX, 14-16 PARK PLACE, NEW YORK.

### Omissions in Bills of Lading.

We have many replies in addition to those given last week from jobbers and manufactures, as well as retail merchants, to the question:

*Why will manufacturers and jobbers shipping goods fail to put weight and rate of freight in the bills of lading?*

These replies indicate a good deal of diversity in the practice of merchants in the management of their freight matters. Many of them apparently give little attention to this department of their business and pay their freight bills without looking carefully into their correctness. It would appear that neglect on the part of the shippers of goods to insert weight and rate of freight is the result of the practical indifference of their customers. If the merchants demand that the bills of lading be made out completely they will have little difficulty in having them complete. If they are satisfied with them in incomplete form they must not complain, for they have only themselves to blame. As a method of correcting the difficulty the following from an enterprising Southern house will be of interest:

FROM A MISSISSIPPI CONCERN: We have had printed at the head of our order sheets, so that it cannot be overlooked, the following:

*NOTICE.—Unless the bill of lading showing weight and through rate of freight accompanies the invoice for this order, the contract will not be considered complete, and shippers' terms of payment will be disregarded accordingly.*

We suggest that if all would adopt this plan or a similar one, and carry it out to the letter, the manufacturers will see to it that the shipping department completes the transaction in proper manner.

### Views of Manufacturers and Jobbers.

Inasmuch as the question implies neglect on the part of shippers we are glad to have the following advices from manufacturers and jobbers, most of whom defend themselves against the accusation. The whole subject of freights, as thus brought up, is interesting and suggestive:

FROM A MANUFACTURER IN OHIO: We find that this omission is quite frequent, and there is no doubt but what the above party has grounds for complaint. We make it a rule to have the freight rate and weight inserted on the B. of L. for each shipment.

FROM AN IOWA JOBBER: We enter only the weight of freight as it would require extra help to do more. All our shipments being confined to this State and being very sort hauls, the dealers are well posted on the rate as per

Iowa classification, thus making it unnecessary for us to go to this extra expense.

FROM A PENNSYLVANIA MANUFACTURER: It is our custom, always, without exception, to put the weight of all shipments in our shipping receipts, and when these are exchanged for bill of lading they, of course, will show the weight. As to the rate of freight we only have these placed in our bill of ladings where requested. We

#### Shipping Clerk's Fault.

believe that the Hardware merchant in Florida is justified in raising a question of this kind. We can appreciate his desire for this information and also the convenience of the same, and we believe the omission of the weight from any shipping receipt is the fault of the shipping clerk.

FROM A VIRGINIA JOBBER: Our experience both with goods shipped to us by manufacturers and also shipped for us by manufacturers to our customers, is that while they rarely ever omit to put the weights, they frequently omit the rate. As we both purchase and sell many lines of goods at a delivered price, it is a great inconvenience to us in every case wherever the rate of freight is omitted.

FROM A MASSACHUSETTS MANUFACTURER: Our shipping department has orders to this effect and we believe our customers have appreciated same.

FROM A PENNSYLVANIA JOBBER: We have not heard that this was commonly omitted by manufacturers or jobbers. The rule of our firm is to have the weights of the goods and rates of freight attached to our regular invoices sent. Or if the bills of lading are a day or two behind in reaching us from the steamship or railroad companies, they are sent separately by mail. The manufacturers may fail to do this, but we as jobbers do not fail.

We only know of one complaint that was made where this was neglected, and as soon as we found this out we made an investigation and got weights and rate of freight so we could send to our customer.

FROM A CONNECTICUT MANUFACTURER: The failure to do so is not the fault of the manufacturer, but rather of the transportation companies. The manufacturer is not able to put the rates on bills of lading. This has to be done by the transportation companies, and quite often it is necessary to obtain through bills of lading which necessitates a long delay in getting them. In all these cases they usually insert the rate and weight. The weight is always put upon the bill of lading by the local station, but unless particularly specified for and

#### Not the Maker's Fault.

unless it can go through on the universal bill of lading, so-called, it is necessary to await the actions of the companies through whom the goods are forwarded before the rate can be inserted. We have very few complaints in this office from this source, and where parties write in and request that rates be inserted, we usually are able to obtain them within a reasonable length of time.

FROM A PHILADELPHIA MANUFACTURER: We find that complaints with regard to omission of weights and rates invariably come from the South. There appears to be a disposition on the part of the Southern roads to purposely omit inserting freight rates; for what reason we really could not say, but where our customers insist upon having the rates inserted we always send the shipping receipts to the main office of the transportation company with request that they furnish a bill of lading with rates and weights inserted, and when this request is made we have no difficulty in procuring what the customer desires. Our own shipping receipts, which are made out in our packing and shipping department always have the weight inserted; in fact, we could not make shipments without showing the weight, and we fail

#### Southern Roads Omit Rates.

to see how any one else could do so. The shipper naturally cannot insert the rate, that being left for the transportation company. We think it would be well to ascertain for what reason the Southern roads are so reluctant in inserting freight rates when bills of lading or shipping receipts are submitted.

#### From Hardware Merchants.

FROM AN OHIO HOUSE: Referring to manufacturers and jobbers shipping goods without the weight or freight on the B. of L., we suggest that these be immediately sent back for correction, and that the dealer insist that neither jobber or manufacturer has a right to put this burden of correction on the merchant.

FROM A WISCONSIN MERCHANT: This would entail considerable extra work on the part of the shippers, but should it be done the receiver would have a check on all goods coming into his store, as he would soon familiarize himself with the classification on goods he was handling.

FROM AN INDIANA MERCHANT: I have experienced no trouble in this line. We have several lines entering our city. Therefore the agents take care of us, as they know if they did not we would divert our business to another road.

FROM A NORTH DAKOTA FIRM: They don't do this because it makes them a little more work. It should be done for the protection and accommodation of the receiver of the goods.

FROM AN ILLINOIS MERCHANT: We heartily indorse our Florida brother's complaint in regard to the failure on the part of shippers to state the weight and freight rate on bills of lading. We believe as he does, that a great amount of money falls into the hands of the railroad company which should remain with the dealer. It would in the end be an advantage to the jobber to do this, inasmuch as anything which benefits the dealer is an indirect benefit to the jobber and manufacturer.

FROM AN IOWA FIRM: Not 5 per cent. of the bills of lading amount to anything of value to the consignee in small shipments, as rates and weights especially are missing. In many cases where weights are recorded, they are not reliable, as there is too much guessing at weights by shipping clerks. Yet why complain, since very few merchants ever take the trouble to verify the figures on rates and weights? They simply pay the freight bill. Many do not even check off their freight bills, and only discover shortages or overs after the packages have been opened. Thus we find the retailer quite as remiss as the jobber or manufacturer, and a bill of lading showing rates and weights would be appreciated by only a few.

FROM A SOUTH CAROLINA MERCHANT: It seems that there is no such a thing as a real rate. We have had bills of lading with rate inserted, and they are more times turned down than accepted. The railroads charge to suit themselves, and especially express companies.

FROM A NORTH DAKOTA HOUSE: We have found it very profitable for us to send our freight bills to people who make it their business to collect all overcharges. Regarding weights, the only way to have this correct would be for a merchant to put in a set of floor scales at his store and weigh each package himself. He must be aware that there is a great deal of guessing by all shipping clerks when billing freight. We have never found any great discrepancy in weights, but we have sometimes found considerable in classifications.

FROM AN ARKANSAS MERCHANT: Insist that manufacturers and jobbers enter the correct weight and rate of freight on bill of lading. If this is properly attended to,

it will save the party receiving the goods time and money. The weight and rate, and name of goods shipped, must be correct, however. If the shipper cannot do this or does not want to go to the trouble to do it, it had better be omitted. Either correct or not at all.

FROM AN IOWA FIRM: This question should certainly bring out some interesting ideas. Every shipment should be weighed, rated and plainly marked with full name and address; and as the railroad companies are responsible for the safe carrying and delivering of the shipment, they should demand that these points be fully complied with. Most of the firms we buy of follow this rule on all but rate, and this we check carefully. Any shipper can have on his desk a tariff book for the asking.

FROM A NEW YORK STATE MERCHANT: I consider it very important to have bill of lading showing weight and freight rate of every shipment. I would suggest to the Florida brother that he have printed on his order heads a request, in a prominent place and in bold type, with some special indicator calling jobbers' attention to this special request for bill of lading, &c. If this request is ignored I have often returned invoice and bill of lading, stating that I should refuse the shipment unless bill of lading was made as requested in order, and I have had but little cause for complaint since.

FROM A MARYLAND MERCHANT: To-day we are unloading a car of stuff which arrived four days ago; the car disappeared for two days—was apparently hauled 20 miles for weighing. The bill of lading gives the weight 2 tons less than the freight bill, but the bill of lading always reads, "Weight subject to correction." We are in position to prove the weight. We have paid the freight. If we find we have paid too much, the railroad will consider (or not consider) a claim, provided we present the original bill of lading and the freight bill, and maybe in the course of time will refund the overpayment, which they exacted as a condition of delivery. The railroad people do not know their business. Within a year they held a car of ours 10 days because we declined to pay a higher rate than the bill of lading gave. Then they found our claim right and demanded demurrage; then they waived demurrage and we unloaded the car.

### Special Brands Versus Manufacturers' Brands.

QUESTION No. 10. *What is the experience of the trade in selling special brand goods? In other words, to put it plainly, how many retail merchants if they had the past three years to do over again would put in stock special brands of Hardware, Edge Tools, &c., as sold by jobbers to-day?*

On this question the opinion of the trade is evidently divided, as reflected in the following letters from Hardware merchants:

FROM A PENNSYLVANIA MERCHANT: I have never stocked a full line of so-called jobbers' brands. In making purchases through a jobber of a good article I must know the maker. If they cannot or do not want to tell the maker I pass the purchase. I am in favor of manufacturers advertising and setting selling price, provided they give the dealer a fair profit. It is my opinion that a line of jobbers' brands is not a good article for the retailer to handle. The jobber has these goods made up as low as he possibly can, taking the risk of the quality. If I want a Maydole Hammer, a Disston Saw, a German-town Hatchet, I do not want any special brand tool.

FROM AN OREGON CONCERN: Our experience is that special brands often sell well, as they are generally fully guaranteed.

FROM A PENNSYLVANIA CONCERN: Our experience can scarcely be taken as a criterion in this matter, for the reason that we never stocked up very heavily along this line, having confined our efforts more to the regular lines, or manufacturers' brands, for the reason that on the one hand we have always believed that we were getting better value for our money, and giving our customers a more reliable article in selling them established manufacturers' brands.

Another thing which has to a large extent deterred us in the matter of special jobbers' brands is the, to our mind, unreasonably high prices that one certain very much advertised brand is expected to sell at, a line of prices, in our judgment, entirely out of proportion to their real value.

We have had some experience with a few of some of the less advertised jobbers' brands, and must say that we have had very good satisfaction with them, and we consider that if we do not take up a line which is held at an unreasonably high price they are good, desirable goods, but we do not fancy tying ourselves up to one private brand line too tightly. To our mind an extra high price will not be readily paid by the consumers merely on our say so, or that of the people interested in pushing them ahead of standard goods. Taking it all in all we seriously doubt the expediency of putting in stocks of these special lines of goods.

FROM A WASHINGTON HOUSE:—If specials are uniformly good they become popular, and it helps other lines, but if manufacturers are not careful in tempering so that there is once in a while one that is not up to "snuff," the manufacturer had better leave his brand off and let the customer think the other fellow made it. We have had good success in selling a well-known special brand because they are uniformly good and give us a good standing on other goods.

FROM A HARDWAREMAN ON THE PACIFIC COAST: Special brands of tools if they are good and guaranteed are trade winners and a pleasure to sell. I am going to carry more special brands, either from factory or jobber.

FROM A LOUISIANA CONCERN: We find that in selling special brand goods there is less competition in selling the class of goods.

FROM A WASHINGTON HARDWARE HOUSE: We prefer to handle only manufacturers' brands.

## Questions Referred to Our Readers.

### Advantage of Cash Discount.

QUESTION No. 8. FROM NEW YORK: *If a merchant's purchases in the course of a year amount to \$20,000, what actual saving is effected by taking advantage of the discount of 2 per cent. for cash in 10 days?*

### Changes and Failures in Business.

QUESTION No. 9. FROM NEBRASKA: *Why are there so many changes and failures in the Hardware business in the West?*

### Should Retail Merchants Demand Low Prices?

QUESTION No. 11. FROM OHIO: *Is it wise on the part of retail Hardware dealers to demand that they be given prices that will enable them to meet the prices of the great retail stores of the cities?*

### Remittances by Check or Draft.

QUESTION No. 12. FROM WISCONSIN: *Should remittances be made by local check or bank draft?*

### Selling Stock to Farmers.

QUESTION No. 13. FROM PENNSYLVANIA: *Would it pay in a small town surrounded by good farming territory, with competition on all sides, to incorporate and sell a small amount of stock to influential farmers, from \$100 to \$300 to a man, perhaps \$3000 worth of stock in a \$20,000 incorporation? Would it pay to be incorporated, anyway?*

## Advertised Prices Cut by Competitors.

QUESTION No. 26. FROM ARKANSAS: *In a city of 25,000 population there are four Hardware concerns, one of which advertises extensively in city and adjacent community direct and through medium of local newspapers. Their advertisements point out certain goods with cuts and descriptive matter and quote prices. The three remaining stores use this information as a means to undercut prices in an effort to secure the business. The same applies to their show window advertising. Would it be wise for this firm to continue its method of advertising?*

## The Little Rock Freight Traffic Bureau.

### A New Feature of Hardware Association Work and Activity.

THE Freight Traffic Bureau, which has lately been established under the auspices of the Arkansas Retail Hardware Association, is working very satisfactorily, so well, in fact, that through the bureau it is hoped to build up the association and add materially to its membership, the privileges of the service being confined to members only. W. L. Harlan, Little Rock, secretary of the organization, is in charge of the bureau as manager, Mr. Harlan being especially qualified for the work on account of seven years' experience in the employ of railroads. This is a new feature of association work, and it is not unlikely that other State bodies will take it up in view of the benefits secured for members.

The object of the bureau is to revise freight expense bills, enter claims for overcharges and damages, follow up such claims until they have been properly settled, and otherwise to look after the traffic affairs of those entitled to the service. At the present time the charge for this work is 50 per cent. of the amount of claims and overcharges adjusted, this money going into the association's treasury and helping to maintain the office. At the coming annual convention in June, however, it is expected that a more specific charge will be decided upon, based on the service thus rendered.

It is worthy of note that several high officials of roads leading out Little Rock have expressed themselves as gratified that the association has taken this step, assurance being given that the companies will co-operate in every way possible in the prompt adjustment of such claims as may be filed. The bureau has been placed on the mailing list of the various railroads and is now prepared to furnish prompt service to the members of the association. As time passes it is hoped to improve materially the service and to make it so valuable that every Hardware merchant in the State will avail himself of its benefits.

THOMPSON & Co., makers of paint, Allegheny, Pa., issue a booklet intended for circulation among manufacturers and other large consumers, in which attention is called to their business as specialists in this line, making up orders from the formula of the purchaser or a special formula based on the firm's extensive experience in this field. Only the best materials are used in the products thus supplied. The company's line of paints and specialties includes asphaltums, air drying japans, baking japans, high heat paints, flat black, graphites, red lead, red oxide, Venetian red, metallic brown, white lead, zinc white, machine coatings, lacquers, oils, dryers and special thinners and marking colors.

THE UTICA DROP FORGE & TOOL COMPANY, Utica, N. Y., is now selling its product direct to the retail trade, this policy having taken effect April 1. The company manufactures a complete line of Nippers and Pliers, for the production of which its plant is practically a new one, having been rebuilt following the fire about two years ago on the most modern and approved lines.

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## Death of Xenophon Stoutenborough.

XENOPHON STOUTENBOROUGH died at his home last week, in Brooklyn, after an illness of six days from pneumonia, having been attacked at his office Thursday of the previous week. Mr. Stoutenborough was engaged in the house furnishing and shipping supply business in Pearl near Fulton street, for nearly 60 years. He was born in New York City 80 years ago and started business life as a clerk in 1850, becoming a partner in 1858 in the firm of T. H. Atwater & Co. In 1864 the title became Atwater, Benham & Co., and at the death of Mr. Benham the deceased associated himself with T. D. Henderson as Henderson & Stoutenborough, until 1890, when the business was conducted in his own name. He was for 45 years a member of Montauk Lodge, F. & A. M., and was a charter member of the Twenty-third Regiment, N. G. N. Y. He leaves a widow and two daughters.

## Star Expansion Bolts.

The Star Expansion Bolt Company, Bayonne, N. J., has recently improved its product by making a sleeve which may be used with lag screws of any standard thread. This is an obvious advantage, and is especially important in sections where screws of different threads are in common use. A screw and shield are shown in Figs. 1 and 2, respectively, and Fig. 3 shows the action of the screw in the shield. In Fig. 4 is illustrated the interior of the shield, which is described by the company as having an interrupted thread receiving any standard screw. The two-piece lag screw type is designed for use with coach or lag screws of any length, and may be had

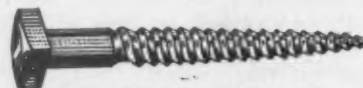


Fig. 1.—Lag Screw.



Fig. 2.—Shield.



Fig. 3.—Expansion of Shield by Screw.

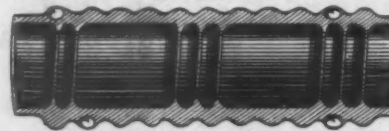


Fig. 4.—Method of Threading Inside of Shield to Fit Any Standard Lag Screw.

in all sizes in malleable iron and in smaller sizes up to 1/2 in. in lead composition metal. Besides this type the company makes the Star Screw Anchor to fit any wood screw from Nos. 5 to 24, and single and double wedge machine expansion bolts, either of which will fit standard machine bolts or screws of any length from 3-16 to 2 in. diameters. The single wedge produces an inside lateral expansion similar in effect to the styles here shown, but operating on the principle of an engaging wedge shaped nut, which picks up the thread of the bolt and is thus drawn outward toward the surface matter, spreading the inner sides of the shield against the sides of the hole. The double wedge also has the same inside engaging wedge shaped nut, but in addition there is a similar wedge shaped unthreaded collar on the outer end of the shield over which the sides of the shield force themselves outward, producing a horizontal expansion. The company also makes Star toggle bolts for fastenings to tile, terra cotta, hollow brick and metal lathing, Star cable dogs for supporting conduits and cable and Star drills for brick and stone.

### Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS** for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM F. J. DRILLING, who has purchased the business of C. E. St. John & Co., Melvin, Iowa, and will carry Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Window Glass, Paints, Oils, &c.

FROM W. S. THURSTON HARDWARE & IMPLEMENT COMPANY, which has been incorporated in Nocona, Texas, with a capital stock of \$15,000, taking over the business of W. S. Thurston. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods, and all kinds of Vehicles.

FROM MULDER & LUGERS, Holland, Mich., who have succeeded to the business of Mulder & Brenker.

FROM ILION HARDWARE COMPANY, which is about engaging in business in Ilion, N. Y., and will carry General Hardware, Stoves, Furnaces, Paints, &c., and will conduct a plumbing and tin shop.

FROM STANTON-LINDBURG HARDWARE COMPANY, which will open for business May 1 in Fort Smith, Ark., handling Shelf Hardware, Stoves, Tinware, Housefurnishings, Agricultural Implements and Sporting Goods.

FROM DAVID D. SLAUGHT HARDWARE COMPANY, Newark, N. J., which has removed to premises opening on 221 Washington street and 70-78 Bank street. The first floor has been fitted up in a modern way for general store purposes, and the second floor front is occupied by offices and showrooms. The company especially desires catalogues relating to Builders' Hardware, &c.

### TRADE ITEMS.

THE JOSEPH F. MCCOY COMPANY, 157 Chambers street, New York, has taken over the entire output of H. G. Osborne, formerly 74 Cortlandt street, New York, manufacturer of Hollow Extension Brick, Cement and Stone Drills. The Drills are in various diameters, being made of short lengths of tubing with saw-tooth edge and hardened. They are threaded inwardly to screw onto suitable lengths of gas or water pipe, according to the depth of hole to be drilled. The Drills are put up regularly in sets of four in a small wooden box, special sizes being furnished to order. The company will also market the entire product of George E. Benton, maker of a patented serrated edge Hedge Shear. The product includes also straight Trimmers, bent Trimmers, Barbers' Shears, Pruning Shears and Tinner's Snips, in addition to the Hedge Shear.

WILLIS H. SIMPSON, 155 Chambers street, New York, has been appointed general sales representative for the United States of the Russell Jennings Mfg. Company, Chester, Conn., manufacturing the well-known genuine Russell Jennings Auger Bits, Machine Bits and kindred boring tools. Mr. Simpson has long represented the David Maydale Hammer Company, Norwich, N. Y.; Westcott Chuck Company, Oneida, N. Y., and the West Haven Mfg. Company, New Haven, Conn.

THE DEMOLITION soon after May 1 of the office building at 7 Warren street, New York, to provide a site for an extension to the Rogers, Peet & Co. building, has necessitated the removal of a number of houses representing manufacturers of hardware, cutlery and allied lines. U. J. Ulery will occupy new quarters at 25 Warren street, where he will continue as export and Eastern representative of Clauss Shear Company, Fremont Razor Strop Company, Naponach Knife Company, Atlas Shear Company, Clyde Cutlery Company, Deerlick Oil

Stone Company and International Cutlery Company. George W. Davis, representing the Harrington Cutlery Company, Southbridge, Mass.; William Schollhorn Company, New Haven, Conn., and Lancaster Machine and Knife Works, Lancaster, N. Y. will take quarters at 258 Broadway. F. E. Carpenter Company, representing the Stewart Iron Works, Cincinnati, Ohio, manufacturing iron fencing and ornamental iron work, has secured a suite of rooms at 253 Broadway. Graham & Berwin, representing the Brass Goods Mfg. Company, Brooklyn, N. Y., will go to 148 Chambers street. The firm also manufactures a line of dog collars, glass drawer knobs and pot cover knobs.

THE FRASSE COMPANY, 134 Liberty street, New York, will about May 1 remove to the Hudson Terminal Building, 30 Church street, near Cortland. The company will greatly enlarge the line carried, it being the intention to have a complete stock of Cutlery, Motor Boat Supplies, Fishing Tackle, Automobile Supplies, Drawing Materials, Welsbach Gas Lamps, Mantles, &c., Fountain Pens, fine tools and a general line of Hardware metals and machinery.

### Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

NEW YORK CORDAGE COMPANY, 83-85 Wall street, New York: The Nycord Atlas of the World, containing maps of each State and Territory in the United States and every country in the world.

COLLINS PLOW COMPANY, Quincy, Ill.: Catalogues relating to Eli Baling Presses; Gang Plows, Road, Street and Contractors' Plows; Cultivators and Corn Listers.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: Extra pages for its loose leaf catalogue, showing spring and summer goods, Guns, Pistols, Revolvers, &c.

HUSSEY-BINNS SHOVEL COMPANY, Pittsburgh, Pa.: Catalogues Nos. 31 and 32 giving illustrations, descriptions and list prices of a large variety of Shovels, Spades and Scoops. Besides the regular patterns there are a number of somewhat unusual styles and shapes adapted to special purposes. Drain Cleaners, Drain and Ditching Spades, Sewer Shovels and Break Down Scoops are also included in the line. Hereafter the company's brand, "Washington," on Shovels, Spades and Scoops, will be discontinued, and brand, "Geo. V. Willson," will be substituted. Catalogue No. 31 includes only goods that are warranted crucible cast steel.

RICHARDS MFG. COMPANY, Aurora, Ill.: Booklet entitled "The Making of a Builders' Hardware Salesman." A chapter on this subject constitutes the preface to subsequent pages illustrating and describing the Richards' Royal, Richards' Palace and Richards' Torley Hangers.

THE BULLARD & GORMLEY COMPANY, Chicago, has fitted up the connecting stores at 41-43 State street and 53-55 Lake street for the accommodation of both retail and wholesale Hardware departments. The new quarters will be occupied by May 1.

### Gillette Shaving Brushes and Soap.

The Gillette Safety Razor Company, 18 Tremont street, Boston, Mass., has just put on the market a series of guaranteed Gillette shaving brushes, numbered consecutively from 100 to 110, with bristles set in rubber, retailing for from 75 cents to \$5 each. They have mixed badger hair, mixed badger and bristle and various qualities to superfine badger according to price. There are both celluloid and collapsible metal handles, ranging from 3 to 5¼ in. in length, the latter so constructed that the brush can be inserted in the handle for carrying in pocket or suitcase. Another new article is a distinctive Gillette soap, said to contain the best and purest materials, foil covered, and put up in round nicked box.

### The Irwin Auger Bit Company.

The Irwin Auger Bit Company, Wilmington, Ohio, in its new catalogue recently issued lists a new line of bits, No. 63T, which are 12 in. long over all, and have a twist of 8 in. They are especially recommended for the use of electricians and linemen. Other additions to the company's product include the set, No. BB, 14 quarters, in the regular "model" case without sliding drawer. This outfit is put out to meet the demand for a special small set of auger bits, and consists of six bits, one each 4, 6, 8, 10, 12 and 16 sixteenths. Still another new feature are the sets of 20½ and 32½ quarters packed in canvas rolls No. R. The rolls are made of heavy drab canvas lined with white Canton to prevent rusting.

### The L. & I. J. White Company.

The L. & I. J. White Company, Buffalo, N. Y., and 45 Centre street, New York, in its new catalogue lists a large assortment of edge tools recently added to its line. Among them are No. X I superior socket firmer chisels with fancy applewood handles, No. 24 C English pocket chisels with polished hickory handles, No. 24 D floor chisels for plumbers, electricians, &c.; No. 24 E superior cold chisels, No. 24 F superior cape chisels, No. 24 G screwdrivers having extra heavy blades, No. 24 H screwdriver bits 5 in. long over all, and No. 24 K same style, but 7 in. long; No. 43 A tooth plane irons, No. 52 ship deck scrapers with new style sockets, No. 52 B double handle box scrapers, No. 52 C single handle box scrapers, No. 56 B scratch awls, No. 615 loin cutting knives, No. 612 kitchen saws, No. 613 butchers' saws with blued clock spring blade, and No. 614 butchers' saws with silver steel blades.

### The Wagner Coaster Wagon.

A new coaster wagon, with all-steel gear and wheels, has been placed on the market by the Wagner Mfg. Company, Cedar Falls, Iowa. The essential features of this wagon are patented stamped steel wheels and bolster frames of like construction. The wheels are stamped out of a solid piece of metal in two parts, which are firmly riveted together and the hub is reinforced both inside and out, making a bearing of three thicknesses of steel. The spokes being of one part with the wheel cannot become loose. The frame is likewise made of two stamped pieces fitted and riveted together with a top bearing plate for



The Wagner Coaster Wagon.

the box, and the axle, being inserted through a formed opening in the leg of the frame, is securely gripped and held by riveting. All of the large sized flat tired wagons are fitted with reinforced tires, and are in effect double steel tired. The axles are fitted with roller bearings and a clip on the end of the tongue prevents it from dropping to the ground when coasting. In the type here shown the tongue is also used for steering, but in the patented auto type a special steering lever is provided. The coaster is made in two sizes, No. 20, with 14 x 36 in. box,

and No. 30, with 16 x 40 in. box, weighing 30 lb. and 34 lb. each. They are put up in knock-down form, one-sixth dozen in a crate.

### The Thompson Lawn Sprinklers.

The accompanying illustrations represent lawn sprinklers, for which the L. C. Pond Company, 322 East Third street, Los Angeles, Cal., is sole distributor. The Wizard sprinkler delivers water in a flat, fan shaped



Wizard.



Thompson.



Ideal.

The Thompson Lawn Sprinklers.

spray. The Thompson gives an abundant delivery of water in a fine spray, over a rectangular area, and is recommended for use in greenhouses and on new lawns and flower beds. The Ideal sprinkler is constructed to distribute water evenly over a square area when a full pressure of water is used. With a low pressure the water forms a straight edge over an oblong area.

### The H-B Post and Hanging Lamp.

The Handlan-Buck Mfg. Company, St. Louis, Mo., is offering the lamp shown herewith for use on railroad



The H-B Post and Hanging Lamp.

platforms or in waiting rooms. It is referred to as giving a powerful and brilliant light. The wick is regulated from the outside, and the font is filled without removing the globe. The globe and oil font are supported while cleaning the chimney, and the globe can be cleaned without removing it from the lamp. The entire height of the lamp is 27 in., using a No. 3 tubular globe and No. 40 Macbeth chimney. The reflector is 14 in. wide, and the lamp is designed to burn 16 hr. It is said to be strong and durable, and as having perfect ventilation.

The White Hardware & Implement Company has been incorporated in Centralia, Okla., with a capital stock of \$10,000, handling Shelf and Heavy Hardware, Stoves, Housefurnishings, Window Glass, Implements, Paints, Sporting Goods, Harness and Vehicles.

### Howler Alcohol Utilities.

The Howler Mfg. Company, Montgomery, Ala., has been conducting a series of experiments in alcohol burning appliances with a view to meeting the demand for

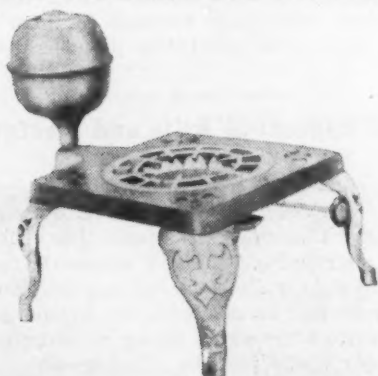


Fig. 1.—One-Hole Alcohol Stove.

utilities of this kind, which has followed the removal of the tax on denatured alcohol. The company is now putting on the market a number of these appliances, which are illustrated and described in a catalogue now obtainable by the trade. Four are shown in the accompanying illustrations. Fig. 1 represents a single burner stove



Fig. 2.—Two-Hole Stove.

with top 11 in. square, and Fig. 2, a two-hole stove with top 13 x 24 in. The former weighs 11 lb., and the latter 22 lb. The stoves are made of cast iron and are offered in three finishes, polished nickel, bright tinned and galvanized, with guard rail, the latter for marine purposes. It is stated that the operation of one burner costs but 1½ cents an hour; that it will boil a quart of water in about 5 min., is simple to manipulate and positively safe. The single burner stove is recommended to take the place of a chafing dish, and can be used with satisfaction in

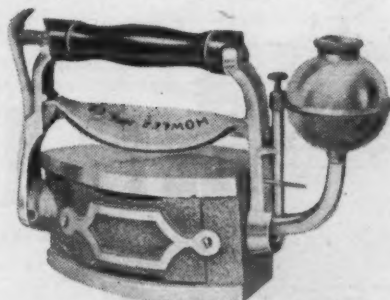


Fig. 3.—Self-Heating Alcohol Iron.

bedroom or nursery, as it is said to burn without odor even when turned low. It is also recommended for travelers, sportsmen, automobilists, yachtsmen, &c. Fig. 3 illustrates a self-heating revolving iron for family use which weighs 6½ lb. It is made with a double face and can be revolved by pressing a latch attached to the handle. The top heats and as the side in use cools the iron is revolved so as to bring the heated surface into use. The body and all metal parts are polished nickel, and the handle is black ebony. Another iron, Fig. 4, weighs 18 lb., and is for use as a tailor's goose. It is stated that the irons can be heated to any desired temperature, the heat being regulated by a valve which controls the flame. A patent device creates a perfect draft

inside the body of the iron, thus preventing the smothering of the flame as well as keeping it from flashing out at the sides of the iron while in use. The small tank or fuel reservoir holds 2 ounces of alcohol and will burn 1 hr., costing a little over a cent an hour to operate.

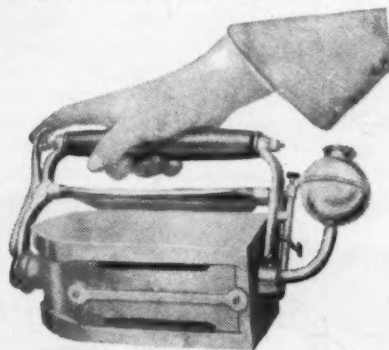


Fig. 4.—Self-Heating Tailor's Goose.

The iron may be used outdoors as well as indoors, which is regarded as an advantage for the housewife or laundress in the summer months.

### The Sterling Grass Hook.

The Nolin Mfg. Company, Skowhegan, Maine, is putting on the market the grass hook shown herewith. It is a light weight tool with fine steel blade, oil tempered and having a good cutting edge. The blade is bronzed on



- Sterling Grass Hook.

one side with polished edges ground sharp. The shank is of strong iron painted black, and securely riveted to the blade, and the handle is enameled black. The hooks are made in one size only, and are packed 1 dozen in a neat wooden box.

### The Goodell-Pratt Bench Grinder No. 115.

The Goodell-Pratt Company, Greenfield, Mass., is offering the bench grinder shown herewith. Cut gears are used in its construction, and all parts are carefully machined. The construction, workmanship and finish



The Goodell-Pratt Bench Grinder, No. 115.

have been handled with the same thoroughness and attention to detail as the company's other products. Particular attention is called to the smooth and quiet running of the machines, which is ascribed to the turning up and accurate cutting of the gears. Each machine is equipped with a high quality grinding wheel.

### Brighton Meat Juice Extractors.

The Wrightsville Hardware Company, Wrightsville, Pa., has added to its line the Brighton meat juice extractor, No. 12, here illustrated. It is designed for extracting the juices from meat and for making beef tea, soups, &c., and differs from the No. 10, already on the market, in being provided with a clamp for attaching to a table to hold it steady during the process of pressing the meat. The frame is japanned, while the cup and plunger,



Brighton Meat Juice Extractor, No. 12.

which are the only parts coming in contact with the meat or juice, are coated with pure tin. In use, the meat is cut into small strips and placed in the cup; the plunger or agitator is then forced down upon it by means of the screw. The agitator, which is corrugated, is moved back and forth by means of a handle, thereby crushing the meat into shreds and separating all the juice. The extractors are each packed in a separate box, 1 dozen in a case, weighing 90 lb.

### Woodland Sprayer Outfit.

W. & B. Douglas, Middletown, Conn., have put on the market the Woodland sprayer, known as Outfit C Pump, Engine, Tank and Wagon complete, with fittings as here shown. It is referred to as embodying years of experience in fighting the Gypsy and Brown-Tail moths in large areas of woodland. The purpose has been to suc-



Woodland Sprayer, Pump, Engine, Tank and Wagon.

cessfully meet conditions involving rough roads, long lines of hose, least possible weight and ability to maintain continually a pressure of 250 lb. per square inch at the pump. The capacity of this apparatus, it is said, permits the operator to stand on the ground and spray

the tops of 70-ft. trees. All necessary valves, pressure gauge, &c., are included in the outfit shown or may be modified to meet the views of purchasers. The approximate weight of this outfit is 4800 lb., the engine being 10-hp. marine type, with outside guided triplex pump brass mounted with brass plungers for high pressures. The agitation tank is operated by propellers on a rotary shaft.

### New Repeating Rifle and Shotgun.

The accompanying illustrations represent new models of firearms just being introduced by J. Stevens Arms & Tool Company, Chicopee Falls, Mass. The visible loading feature of the rifle No. 70, Fig. 1, allows the cartridge to be always in sight while being fed into the chamber. The magazine tube and breech block are in one piece. The double extractors are extra strong to make the extraction of empty shells positive. The breech block has a positive lock and is operated by the slide handle after the breech is closed. The hammer also has a positive lock and is always locked while the breech is unlocked. The rifle is made in two styles: For .22 short and .22 long rifle cartridges, holding 15 of the former and 12 of the latter. The barrel used for the .22 shot cartridge is rifled with a slow twist—one turn in 25 in.; for the .22 long rifle the rifling has a quicker twist—one turn in 16 in. The rifle made to take the .22 long rifle cartridges will also handle .22 short, and those taking the .22 short will also handle C. B. caps. The arm is referred to by the company as a very fine shot. It has a 20-in. round barrel, extreme length 35 in., with varnished stock and slide handle, case hardened frame and rubber butt plate. Regularly it is fitted with bead front and sporting rear sights. It may also be obtained with Beach combination front, Stevens leaf and vernier peep sights, or with Lyman front No. 5, Stevens leaf and Lyman No. 1 sights, both of the last mentioned at an increase in price. The repeating shotgun, No. 520, Fig. 2, has a Stevens compressed forged steel barrel, finished in black oxide to impart a pleasing and lasting appearance. The receiver is a solid drop forging, and in the manipulation of the gun none of the interior parts protrude. The tangs to which the stock is fitted are extra long to add strength to the stock at its weakest point. Shells are ejected from the side, away from the shooter. The gun can be taken down and put together quickly. The safety is inside the guard, forward of the trigger, and can be moved backward and forward without removing the finger. The slide handle is unlocked by the recoil

immediately after the discharge of the shell, and by the backward motion of the slide handle the discharged shell is drawn out of the chamber and at the same time the loaded shell starts out of the magazine onto the lifter. It is explained that by this method the gun can be fired

without clogging as fast as it is possible for a shooter to work the slide handle. The slide handle is metal lined and capped at both ends to render it indestructible. The

and the locking block is in its proper position. The locking nut is so constructed that it takes up all wear at the take down. The gun has Stevens compressed

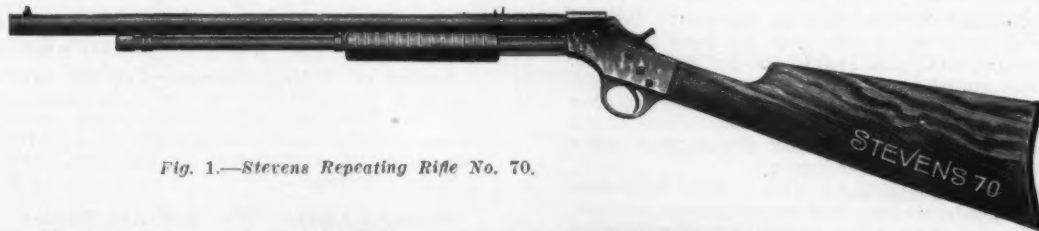


Fig. 1.—Stevens Repeating Rifle No. 70.

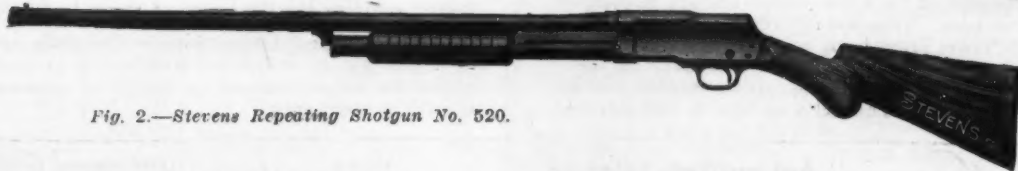


Fig. 2.—Stevens Repeating Shotgun No. 520.

locking block is visible and when the gun is locked can be plainly seen level with the top of the receiver. In opening the gun the firing pin is drawn back and locked and stays locked, it is remarked, until the gun is closed

forged steel barrels, drop forged receiver, black oxide finish, walnut pistol grip stock and side handle, rubber butt plate, cylinder bored and modified choke or full choke barrel, as specified. It weighs about 7½ lb.

## PAINTS, OILS AND COLORS

<b>Animal, Fish and Vegetable Oils—</b> \$ gal.		<b>China Clay, Imported</b> \$ ton 11.50@18.00		<b>Blue, Ultramarine</b> .....13 @16		<b>Black Drop, English</b> .....5 @15	
Lard, Western, Raw.....55 @54		<b>Cobalt, Oxide</b> .....\$ 100 lb 1.45@2.40		<b>Brown, Vandyke</b> .....11 @14		<b>Black, Ivory</b> .....16 @20	
State, Raw.....55 @54		<b>Whiting, Commercial</b> .....\$ 100 lb 1.45@2.50		<b>Green, Chrome</b> .....12 @16		<b>Lamp, commercial</b> .....4 @6	
City, Raw.....56 @57		<b>Ex. Gilders</b> .....\$ 100 lb 52@.64		<b>Green, Paris</b> .....12 @24		<b>Blue, Celestial</b> .....4 @6	
Boiled, 1¢ gal. advance on Raw.		<b>Putty, Commercial—</b> \$ 100 lb		<b>Sienna, Burnt</b> .....12 @15		<b>Blue, Chinese</b> .....30 @31	
Raw, Calcutta, in bbls.....75 @.		In bladders.....\$1.70@2.00		<b>Umber, Raw</b> .....11 @14		<b>Blue, Prussian, Domestic</b> .....28 @30	
Lard, Prime, Winter.....79 @81		In bbls. or tubs, 100 lb.....1.20@1.45		<b>Umber, Burnt</b> .....11 @14		<b>Blue, Ultramarine</b> .....5 @15	
Extra No. 1.....57 @58		In 1 lb to 5 lb tins.....2.65@3.25		<b>Lead, English white, in Oil</b> .....10%@10%		<b>Brown, Spanish</b> .....4 @5	
No. 1.....48 @49		In 12½ to 50 lb tins.....1.50@1.90		<b>Lead, American White:</b>		<b>Carmin, No. 40</b> .....\$3.00@3.10	
Cotton-seed, Crude, f.o.b. mill.....33½@34½		<b>Spirits Turpentine—</b> \$ gal.		<b>White and Red, Lead &amp;c.—</b>		<b>Green, Chrome, ordinary</b> .....3½@5	
Summer, Yellow, prime.....5.50@5.60		In Machine bbls.....42½@43		<b>Lead, English white, in Oil</b> .....10%@10%		<b>Green, Chrome, pure</b> .....17 @25	
Summer, White.....5.70@5.75		In Oil bbls.....43 @43½		<b>Lead, American White:</b>		<b>Ocher, American</b> .....\$ ton \$12.00@15.00	
Yellow, Winter.....5.90@6.05		<b>Glue—</b> \$ lb		<b>Dry and in Oil, 100, 250 and</b>		<b>American Golden</b> .....4 @5	
Tallow, Acidless.....56 @.		Cabinet.....12 @15		<b>500 lb kegs.</b>		<b>French</b> .....14 @17	
Menhaden, Brown, Strained.....33 @34		Common Bone.....7½@9		<b>Dry and in Oil, 25 and 50</b>		<b>Foreign Golden</b> .....3 @4	
Northern Crude.....23 @24		Extra White.....18 @24		<b>lb kegs.</b>		<b>Orange Mineral, English</b> .....10 @12	
Southern.....23 @24		Fish, liquid, 50 gal. bbls., per gal.		<b>Dry and in Oil, 12½ lb kegs.</b>		<b>French</b> .....12 @13	
Light Strained.....33 @34		lon.....60 @1.20		<b>In Oil, 25 lb tin pails.</b>		<b>American</b> .....6½@10	
Bleached Winter.....36 @.		Foot Stock, White.....12 @14		<b>In Oil, 12½ lb tin pails.</b>		<b>Red, Indian, English</b> .....5 @7	
Cocanut, Ceylon.....\$ lb 6.90@6.65		Foot Stock, Brown.....9 @11		<b>In Oil, 1, 2, 3 and 5 lb tin</b>		<b>American</b> .....3 @3½	
Cochin.....\$ lb 6.90@6.65		German Common Hide.....10 @12		<b>cans, ass't.</b>		<b>Red, Turkey, English</b> .....4 @10	
Cod, Domestic, Prime.....38 @.		French Hide.....12 @18		<b>Red Lead and Litharge:</b>		<b>Red, Tuscan, English</b> .....7 @10	
Newfoundland.....40 @.		Irish.....13 @16		<b>In 100 lb kegs.</b>		<b>Red, Venetian, Amer.</b> \$ 100 lb \$0.75@1.50	
Red Elaine.....43 @47		Low Grade.....10 @12		<b>In 12½ lb kegs.</b>		<b>English</b> .....\$ 100 lb \$1.15@1.50	
Saponified.....\$ lb 5% @ 6%		Medium White.....14 @19		<b>In lots of less than 500 lbs.</b>		<b>Sienna, Italian, Burnt and</b>	
Olive, Yellow.....\$1.30@1.50		<b>Gum Shellac—</b> \$ lb		<b>½¢ lb advance over</b>		<b>Powdered</b> .....3 @9	
Nutsfoot, Prime.....55 @56		Bleached, Commercial.....@17		<b>above prices of White and</b>		<b>Italian, Raw, Powdered</b> .....3 @7	
Palm, Lagos.....\$ lb 5% @ 5%		Bone Dry.....@22		<b>Red Lead and Litharge</b>		<b>American, Raw</b> .....2½@3	
<b>Mineral Oils—</b>		Button.....20 @30		<b>Lead, American. Terms: On lots of</b>		<b>American Burnt and Pow'd.</b> 2½@3	
Black, 29 gravity, 25@30 cold		Diamond 1.....20 @30		<b>500 lbs and over, 30 days, or 2% for</b>		<b>Talc, French</b> .....\$ ton \$18.00@25.00	
29 gravity, 15 cold test.....13 @13½		Fine Orange.....23 @24		<b>cash if paid in 15 days from date of</b>		<b>American</b> .....\$ ton 15.00@25.00	
Summer.....12½@13		A. C. Garnet.....16½@17		<b>invoice.</b>		<b>Terra Alba, French</b> .....\$ 100 lb .80@1.00	
Cylinder, light filtered.....20½@21		G. A. L. Garnet.....16 @17		<b>Zinc, Dry—</b>		<b>English</b> .....\$ 100 lb .90@1.00	
Dark, filtered.....18 @19		Kala Button.....12 @13		<b>American, dry</b> .....5½@5%		<b>American</b> .....\$ 100 lb .75@.80	
Paraffine, 903-907 sp. gravity.....11½@15		D. C.....20 @30		<b>Red Seal (French process)</b> .....6½@7		<b>American</b> .....\$ 100 lb No. 1, .75@.80	
903 sp. gravity.....13½@14		Octagon B.....21 @26		<b>Green Seal</b> .....7½@7½		<b>American</b> .....\$ 100 lb No. 2, .60@.65	
853 sp. gravity.....11 @11½		V. S. O.....15½@16½		<b>German Red Seal (French</b>		<b>Umber, Turkey, Hot &amp; Pow.</b> 2½@3	
<b>Miscellaneous—</b>		<b>Colors in Oil—</b>		<b>process)</b>		<b>Turkey, Raw and Powdered</b> 2½@3	
Barres:		Black, Lampblack.....12 @14		<b>Green Seal</b> .....7½@7½		<b>Burnt, American</b> .....2 @2½	
White, foreign.....\$ ton \$18.50@20.50		Blue, Chinese.....36 @46		<b>White Seal</b> .....8½@9		<b>Raw, American</b> .....2 @2½	
Amer., floated.....\$ ton 17.00@18.00		Blue, Prussian.....32 @36		<b>French, Red Seal</b> .....8½@8½		<b>Yellow, Chrome, Pure</b> .....12½@14	
Color.....\$ ton 12.50@15.00				<b>Green Seal</b> .....10%@10%		<b>Oxide Red, American</b> .....2 @7½	
Chalk (in bulk).....\$ ton 3.00@3.70				<b>Dry Colors—</b>		<b>Vermilion, English, Imported</b> .....@70	
				<b>Black, Carbon</b> .....6½@10		<b>Chinese</b> .....\$0.90@1.00	
				<b>Black Drop, American</b> .....3½@8			

# THE IRON AGE

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are usually given to larger buyers.

**Special Goods.**—Quotations printed in small type (Roman) relate to goods of particular manufacturers, who request the publication of the prices named and are responsible for their correctness. They usually represent the prices to the small trade, lower prices being generally obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33%  
North's.....10%  
Upon's Patent, gro. \$29.50.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....10%  
Ives' Stop Bead Screws and Washers.....10%  
Taplin's Perfection.....10%

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, doz. pairs, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

## Anvils—American—

Eagle Anvils.....lb. @ 9¢  
Hay-Budden, Wrought.....lb. @ 9¢  
Trenton.....lb. @ 9¢

## Imported—

Swedish Solid Steel Paragon, lb. @ 10¢  
Swedish Solid Steel Sisco, Superior, lb. @ 10¢  
1st Wright & Co. lb. @ 11¢  
lb. 11¢; 300 to 600 lb. 11¢

## Anvil, Vice and Drill—

Millers Falls Co., \$15.00.....15¢10¢

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

Com. Double Spur.....80%  
Jennings' Patn., Bright.....65¢10¢70%  
Black Lip or Blued.....65¢10¢70%  
Boring Mach. Augers.....70%  
Car Bits, 12-in. twist.....10¢10¢  
Ford's Auger and Car Bits.....10¢10¢  
Ft. Washington Auger Co., Concord's.....35%  
Forester Pat. Auger Bits.....25%  
C. E. Jennings & Co.....25%  
No. 10 ext. lip, R. Jennings' list.....25¢7½¢  
No. 30, R. Jennings' list.....50%  
Russell Jennings.....25¢13¢2½¢  
L'Hommiedieu Car Bits.....15%  
Mayhew's Countersink Bits.....15%  
Pugh's Black.....20%  
Pugh's Jennings' Pattern.....35%  
Snell's Auger Bits.....60%  
Snell's Bell Hangers Bits.....60%  
Snell's Car Bits, 12-in. twist.....60%  
Snell's King Auger Bits.....50%  
Swan's.....50%  
Swan's Jennings' Pattern.....50%  
Wright's Jennings' Bits.....50%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's Pattern, No. 1, 1/2 doz., 13¢  
No. 2, 1/2 doz., 10¢10¢  
Ford's, Clark's Pattern.....10%  
C. E. Jennings & Co., Steer's Pat. 25¢  
Lavigne Pat., small size, 13¢30¢; large size, 22¢00¢  
Swan's.....60%

## Gimlet Bits—

Common Dbl. Out.....\$3.00@3.25  
German Pattern, Nos. 1 to 10, \$3.75; 11 to 15, \$3.75

## Hollow Augers—

Bonney Pat., per doz. \$5.00@5.50  
Ames.....20¢10¢  
Universal.....20%

## Ship Augers and Bits—

Ship Augers.....10¢10¢  
Ford's.....35%  
C. E. Jennings & Co.....65%  
L'Hommiedieu's.....65%  
Watrous'.....35%7½¢  
Snell's.....25%

## Awl Hafts—See Handles, Mechanics' Tool.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75@3.00  
Unhanded, Shilded.....gro. 65¢@66¢  
Unhanded, Patent.....gro. 60¢@70¢

## Scratch Awls—

Handled, Com.....gro. \$3.50@4.00  
Handled, Sock.....gro. \$1.10@1.20  
Elmore Tool Mfg. Co.....55¢7½¢  
Tinner's and Brad Awls.....55¢7½¢  
Scratch Awls.....60%

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

Single Bit, base weights: Per doz.  
First Quality.....\$4.75@5.00  
Second Quality.....\$4.25@4.50

## Double Bit, base weights:—

First Quality.....\$7.00@7.50  
Second Quality.....\$6.50@6.75

## Axle Grease—

See Grease, Axle.

## Axles—

Concord, Loose Collar.....4½¢4½¢  
Concord, Solid Collar.....4½¢4½¢  
No. 1 Common, Loose.....3½¢4½¢  
No. 1½ Com., New Style.....4½¢4½¢  
No. 2 Solid Collar.....4½¢4½¢

## Half Patent:—

Nos. 7, 8, 11 and 12.....70%  
Nos. 13 to 15.....70%  
Nos. 15 to 18.....70¢10¢70¢10¢65%  
Nos. 19 to 22.....70¢10¢70¢10¢65%

## Boxes, Axles—

Common and Concord, not turned.....lb. 50¢6¢  
Common and Concord, turned, lb. 60¢7¢  
Half Patent.....lb. 9½¢10¢

## Bait—

Hendryx:  
A Bait.....20%  
B Bait.....25%  
Competitor Bait.....20¢5%

## Balances—

Caldwell new list.....50¢10¢  
Pullman.....50¢10¢

## Spring—

Light Spring Balances.....60¢10¢45%  
Chatillon's:  
Light Spg. Balances.....50¢50¢10%  
Straight Balances.....40¢40¢10%  
Circular Balances.....50¢10%  
Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars—

Steel Crowbars, 10 to 40 lb., per lb., 2½¢@2½¢

## Towel—

No. 10 Ideal, Nickel Plate.....\$7.00 \$8.50

## Beam, Scale—

Scale Beams.....40%  
Chatillon's No. 1.....30%  
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered 1/2 doz. \$0.80;  
Tinned.....\$0.85  
No. 11 Wire Coppered 1/2 doz. \$1.15;  
Tinned.....\$1.20  
No. 10 Wire Tinned.....1/2 doz. \$1.50

## Beaters Egg—

Dover Stamping & Mfg. Co.:  
Genuine Dover, per gro. No. 1, Tumbler Size, \$7.50; No. 2, Family Size, \$7.50; No. 3, Extra Family Size, \$9.00; No. 4, Hotel Size, \$9.00.

Holt-Lyon Co.:  
Holt, per doz., No. 5, Jap'd. \$0.80;  
No. 4, Jap'd. \$1.15; No. 3, Jap'd. \$1.35; No. 2, Jap'd. \$1.65.  
Lyon Jap'd, per doz., No. 2, \$1.35.

Taplin Mfg. Co.:  
Improved Dover, per gro. No. 60, \$4.00; No. 75, \$4.50; No. 100, \$7.00;  
No. 102, Tin'd. \$8.50; No. 150, Hotel, \$15.00; No. 152, Steel Tin'd. \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tin'd. \$8.50; No. 300, Mammoth, per doz. \$25.00.

## Bellows—

Blacksmith Standard List:  
Split Leather.....60¢10¢65%  
Grain Leather.....80¢80¢10%

## Hand—

Inch.....8 7 8 9 10  
Doe.....\$5.00 5.50 6.00 6.50 7.50

## Molders—

Inch.....10 12 14 16  
Doe.....\$7.50 9.00 12.00 15.00

## Bells—

Wrought Cow Bells.....75%  
Jersey.....75%  
Texas Star.....50%

## Door—

Home, R. & E. Mfg. Co.'s.....55¢10%

## Hand—

Polished, Brass.....60¢60¢10%  
White Metal.....60¢60¢10%  
Nickel Plated.....50¢10%  
Series.....50¢10%  
Cone's Globe Hand Bells.....33%@35%

## Miscellaneous—

Farm Bells.....lb. 2½¢@2½¢  
Church and School.....60¢60¢10%

## Belting—

First Quality, Ex. Hy., Strictly Short Lap.....60¢10%  
Standard.....70¢10¢70¢10¢45%  
Light Double.....75¢10%  
Cut Leather Lacing.....45¢50%  
Leather Lacing Sides, per sq. ft. 25¢

## Rubber—

Competition (Low Grade).....70¢10¢75%  
Standard.....60¢10¢70%  
Best Grades.....40¢50%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%

## Bicycle Goods—

John S. Lang's Son & Co.'s 1908 list:  
Chain, Parts, Spokes.....50%  
Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks Tackle—

Common Wooden.....75¢75¢45%  
R. & L. B. Co.:  
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50¢10%  
Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50¢10%; Wire Rope Snatch, 50%.

Lane's Patent Automatic Lock and Junior.....30%  
See also Machines, Hoisting.

## Boards, Stove—

Paper and Wood Lined.....55%  
Embossed.....55%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Kentel & Esser Co.....33%10%

## Boils

Carriage, Machine, &amp

### Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list: 1200, 15%; 200, 300, 900 ..... 30%  
Hendryx Bronze: Series 700, 800, 30%  
Hendryx Enameled..... 35%

### Calipers—See Compasses.

### Calks, Toe and Heel—

Blunt, 1 prong, per 100 lb., \$3.50 @ \$3.85  
Sharp, 1 prong, per 100 lb., \$4.00 @ \$4.35  
Burke's, 1 pr. Blunt Toe, 3/4" x 1/2" x 1/2" ..... 4%  
Blunt Toe, 1/4" x 1/2" x 1/2" ..... 4%  
4 1/2" x 2 pr. Sharp, 1/4" x 1/2" x 1/2" ..... 4%  
Heel, 1/4" x 1/2" x 1/2" ..... 4%  
Lautier, Blunt, 4 1/2" x 1/2" x 1/2" ..... 4%  
Perkins, Blunt, 1/2" x 1/2" x 1/2" ..... 4%  
Sharp, 1/2" x 1/2" x 1/2" ..... 4%  
4 1/2" x 2 pr. Sharp, 1/4" x 1/2" x 1/2" ..... 4%

### Can Openers—

See Openers, Can.

### Caps, Percussion—

Eley's E. B. .... 52 @ 55¢  
G. D. .... per M. 34 @ 35¢  
F. L. .... per M. 40 @ 42¢  
G. E. .... per M. 48 @ 50¢  
Musket .... per M. 62 @ 63¢

### Primers—

Berdan Primers, 32 per M. 20¢55  
Primer Shells and Bullets. 15¢10  
All other primers per M. \$1.52 @ \$1.60

### Carpet Stretchers—

See Stretchers, Carpet.

### Cartridges—

Blank Cartridges:  
32 C. P. \$5.50 ..... 10¢45  
32 C. P. \$7.00 ..... 10¢45  
22 cal. Rim, \$1.50 ..... 10¢45  
22 cal. Rim, \$2.75 ..... 10¢45  
B. B. Caps, Con. Ball, Sigd. \$1.90  
B. B. Caps, Round Ball, \$1.49  
Central Fire ..... 25¢  
Target and Sporting Rifle. 15¢45  
Primed Shells and Bullets. 15¢10  
Rim Fire, Sporting ..... 50¢  
Rim Fire, Military ..... 15¢45

### Casters—

Bed ..... 65¢10 @ 70¢  
Plate ..... 60 @ 60¢5  
Philadelphia ..... 70¢10 @ 75¢  
Acme, Ball Bearing ..... 35¢  
Gem (Roller Bearing) ..... 70¢10 @ 10¢45  
Steel Gem (Roller Bearing) ..... 70¢  
Standard Ball Bearing ..... 45¢  
Yale (Double Wheel) low list ..... 40¢10

### Cattle Leaders—

See Leaders, Cattle.

### Chain, Proof Coil—

American Coil, Straight Link:  
3-16 3/4 5-16 3/4 3/4 3/4 3/4  
\$7.45 4-80 3.85 3.25 3.10 3.00  
3/4-1/2 1 1/4 to 1 1/2 inch.  
\$2.90 3.00  
In case lots, deduct 25¢.

German Coil ..... 70¢45  
German Pattern Coil:  
6-0 to 1 ..... 70¢10 @ 70¢  
2 and 3 ..... 60¢10 @ 70¢  
4, 5 and 6 ..... 50¢10 @ 70¢10

### Halter—

Halter Chains ..... 60¢45 @ 60¢10  
German Pattern Halter Chains,  
Net July 23, '07 ..... 70¢45  
Covert Mfg. Co. .... 35¢45  
Halter ..... 35¢45

### Cow Ties—

See Halters and Ties.

### Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.  
6 1/2-6 3/4, Straight, with ring. \$26.00  
6 1/2-6 3/4, Straight, with ring. \$27.00  
6 1/2-8 1/4, Straight, with ring. \$30.00  
6 1/2-10 1/2, Straight, with ring. \$35.00  
NOTE—Add 2¢ per pair for Hooks  
Twist Traces: add per pair for Nos. 2  
and 3, 2¢; No. 1, 3¢; No. 4, 4¢ to price of  
Straight Link.

Eastern Standard Traces, Wag-  
on Chain, &c. .... 70%

### Miscellaneous—

Jack Chain, list July 10, '93:  
Iron ..... 60¢10 @ 60¢10  
Brass ..... 65¢  
Safety and Plumbers' Chain. 75¢  
Gal. Pump Chain ..... 4 1/2 @ 5¢  
Bridgeport Chain Co.:  
Triumph Halter and Chain. 2 1/2 @ 40¢  
Triumph Dog ..... 4 1/2 @ 60¢  
Brown Halter and Coll. .... 30¢45  
Covert Mfg. Co.:  
Brest, Halter, Heel, Rein, Stal-  
lion ..... 40%  
Oneda Community:  
American Halter, Dog and Kennel  
Chains ..... 35¢45 @ 40¢  
Niagara Dog Leads and Kennel  
Chains ..... 40¢45  
Wire Goods Co.:  
Dog Chain ..... 70%  
Universal DBL-Jointed Chain ..... 70%

### Chain and Ribbon, Sash—

Oneda Community:  
Steel Chain ..... 60%  
Edman:  
Bronze Chain, 60%; Steel Chain,  
Coppered ..... 60¢10  
Sash Chain Attachments, per set. 3¢  
Aluminum Sash Ribbon, per 100  
ft. .... \$2.00 @ \$3.00  
Sash Ribbon Attachments, per set. 3¢

### Chalk—

Carpenters' Blue ..... pro., 50¢ @ 55¢  
Carpenters' Red ..... pro., 50¢ @ 55¢  
Carpenters' White ..... pro., 40¢ @ 45¢

### Checks, Door—

Bardley's ..... 45%  
Pullman, per gro. .... 35¢10  
Russwin ..... 35%4

### Chests, Tool—

American Tool Chest Co.:  
Boys' Chests, with Tools ..... 55%  
Youths' Chests, with Tools ..... 40%  
Gentlemen's Chests, with Tools ..... 30%  
Farmers' Chests, etc., Chests,  
with Tools ..... 20%  
Machinists' and Pipe Fitters'  
Chests, Empty ..... 15%  
Tool Cabinets ..... 15%  
C. E. Jennings & Co.'s Machinists'  
Tool Chests ..... 74%

### Socket Framing and Firmer

Standard List. 50¢10 @ 80¢10 @ 10%  
Buck Bros. .... 30%  
C. E. Jennings & Co.:  
Socket Firmer No. 10 ..... 25¢7 1/2  
Socket Framing No. 15 ..... 25¢7 1/2  
Swan's ..... 66% @ 70%  
L. & J. White & Co. .... 30 @ 30¢5

### Tanged—

Tanged Firmers ..... 30¢45 @ 35%  
Buck Bros. .... 30%  
C. E. Jennings & Co. No. 101, 185 ..... 45%  
L. & J. White Co. .... 25¢3

### Cold—

Cold Chisels, good quality. 13¢15¢  
Cold Chisels, fair quality. 11¢12¢  
Cold Chisels, ordinary ..... 9¢10¢  
Elmore Tool Mfg. Co.:  
Cold Chisels ..... 50¢45

### Chucks—

Almond Drill Chucks ..... 35%  
Almond Turret Six-Tool Chuck ..... 40%  
Beach Pat, each \$2.00 ..... 35¢45  
Blacksmiths' ..... 25%  
Cincinnati Chuck Co.:  
Independent 4-Jaw Reversible ..... 35%  
Empire Drill Chucks ..... 35%  
Jacobs' ..... 35%  
Pratt's Positive Drive ..... 25%  
Skinner Lathe Chucks:  
Independent ..... 35%  
Universal, Reversible Jaws ..... 35%  
Universal, Com. Style Jaws ..... 40%  
Combination, Reversible Jaws ..... 35%  
Combination, Com. Style Jaws ..... 40%  
Round Body or Box Body, 2 Chuck  
Jaws ..... 25%  
Geared Scroll Chucks ..... 25%  
Drill Chucks:  
New Model ..... 25%  
Skinner Patent ..... 25%  
Positive Drive ..... 40%  
Planer Chucks ..... 20%  
Standard ..... 45%  
Drill Press Vises ..... 30%  
Face Plate Jaws ..... 35%  
Standard Tool Co.:  
Improved Drill Chuck ..... 45%  
Union Mfg. Co.:  
Combination No. 1, 2, 3, 4, 5, 6,  
7, 8 and 17, 40%; No. 21 ..... 35%  
Scroll Combinations, Nos. 83 and  
84 ..... 35%  
Geared Scroll, Nos. 83, 84 and 85 ..... 35%  
Independent Iron, Nos. 18 and 318, 35%  
Independent Steel, No. 64 ..... 25%  
Union Drill, Nos. 603, 60, 100, 101,  
102, 103, 104 ..... 25%  
Union Gear Drill ..... 25%  
Universal, 11, 12, 14, 17, 18, 19, 40%  
Universal No. 42 ..... 35%  
Iron Face Plate Jaws, Nos. 28, 30,  
48 and 50 ..... 35%  
Steel Face Plate Jaws, Nos. 70 and  
72 ..... 30%  
Westcott Patent Chucks:  
Lathe Chucks ..... 50%  
Little Giant Auxiliary Drill ..... 50%  
Little Giant Double Grip Drill ..... 50%  
Little Giant Drill, Improved ..... 50%  
Oneda Drill ..... 50%  
Scroll Combination Lathe ..... 50%  
Whitaker Mfg. Co.:  
National Drill ..... 25%

### Clamps—

Carriage Makers', Star, P. S. & W.  
Co. .... 50%  
Bealy, Parallel ..... 35¢45 @ 10%  
Hammer & Co.:  
Adjustable ..... 20¢45  
Carriage Makers' H. P. Screw ..... 40¢45  
Myers' Hay Rack ..... 50%  
Lineman's Swedish ..... 50%  
Saw Clamps, see Vises, Saw Files—

### Cleaners, Drain—

Iwan's Champion, Adjustable ..... 50%  
Iwan's Champion, Stationary ..... 40%

### Sidewalk—

American Fork & Hoe Co.:  
Star, 3/4 doz., Socket, \$4.00;  
Shank, 3/4 doz., X 7/8, \$3.50; Shank,  
X 8, ..... \$3.75

### Cleavers, Butchers—

Foster Bros. .... 30%  
Fayette R. Plumb ..... 30%  
L. & J. White Co. .... 30%

### Clippers, Horse and

Chicago Flexible Shaft Co.:  
1902 Chicago Horse, each ..... \$10.75  
20th Century Horse, each ..... \$5.00  
Lightning Belt Horse, each ..... \$15.00  
Chicago Belt Horse, each ..... \$20.00  
Stewart's Enclosed Gear Ball  
Bearing Horse, each ..... \$7.50  
Stewart's New Model Sheep  
Shearing Machine, each ..... \$12.75  
Stewart Enclosed Gear Shear-  
ing Machine, No. 2, each ..... \$9.75

### Clips, Axle—

Regular Styles, list July 1, '05,  
80¢80¢10%

### Cloth and Netting, wire

—See Wire, &c.

### Cocks, Brass—

Hardware list:  
Plain Ribbs, Globe, Berosene,  
Racking, Liquor, Bottling,  
&c. .... 75%  
Compression Ribbs ..... 70%

### Coffee Mills—

See Mills, Coffee.

### Collars, Dog—

Nichel Chain, Walter B. Stevens &  
Son's list ..... 40%  
Leather, Walter B. Stevens & Son's  
list ..... 40%

### Compasses, Dividers, &c.

Ordinary Goods ..... 75¢ @ 75¢5

### Conductor Pipe—

L. C. L. to Dealers:  
Gal. Steel, Charcoal, Copper.

Northeastern:  
70¢10¢ — 50¢10¢7 1/2% 50¢10%

Eastern:  
75¢ — 50¢10¢7 1/2% 50¢10%

Central:  
75¢ — 60% 50¢10%

Northwestern:  
75¢ — 60% 50¢10%

Western:  
70¢10¢ — 50¢12 1/2% 50¢5%

Tennessee:  
70¢10¢ — 50¢12 1/2% 50¢10%

Southern:  
70¢10¢ — 50¢12 1/2% 50¢5%

Southwestern:  
70¢ — 50¢5% 50¢5%

Terms, 60 days: 25 cash 10 days. Fac-  
tory shipments generally delivered.

See also Eave Troughs.

### Coolers, Water—

L. & G. Mfg. Co.:  
Gal. .... 2 3 4 6 8  
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00  
Galvanized, Lined, side handles,  
Gal. .... 2 3 4 6 8  
Each ..... \$1.95 \$2.15 \$2.40 \$3.30 \$4.15  
White Enameled ..... 10%  
Agate Lined ..... 10%

### Coppers' Tools—

See Tools, Coppers'.

### Coppers, Soldering—

Soldering Coppers, 3 lb. to pair  
and heater, 2 1/2¢; lighter  
than 3 lb. to pair ..... 23¢4

### Cord—

Sash ..... 1b. 35¢  
Braided, White, Com., Nos. 8  
to 12, 22¢; No. 7, 22¢; No. 6,  
23¢. In lots of 12 doz. or  
over, 1 cent less per pound.

Cable Laid Italian, 1b., No. 18, 37¢  
Italian, 1b., A, No. 18, 25¢; B, 22¢  
Common India ..... 1b. 11¢15¢  
Cotton Sash Cord, Twisted, 18¢50¢  
Patent Russia ..... 1b. 50¢  
Cable Laid Russia ..... 1b. 51¢  
India Hemp, Bridged, 1b. 51¢  
India Hemp, Twisted, 1b. 13¢14¢  
Patent India, Twisted, 1b. 17¢  
Pearl Braided, cotton, No. 6, 9 lb.,  
20¢4¢; No. 7, 19¢4¢; No. 8 to 12,  
19¢4¢, in 12 doz. to 100 doz. lots,  
Eddystone, Braided, Nos. 8 to 12,  
28¢; 7, 26¢; 6, 27¢4¢  
Harmony Cable Laid Italian, No. 7  
Fullman ..... 1b. 23¢  
Wire Sash Cord ..... 10%  
Sash Cord Attachments, per 100, \$2.00  
Samson, Nos. 8 to 12:  
Braided, 1/2 lb., Drab Cotton,  
55¢; Italian Hemp, 40¢4¢  
50 lb. Linen, 55¢; White Cot-  
ton, 50¢; Spot Cord ..... 50¢  
Massachusetts, White, 1/2 lb. 40¢  
Massachusetts, Drab, 1/2 lb. 45¢  
Phoenix, White, Nos. 8 to 12 ..... 37¢  
Silver Laid, per lb.:  
A, Drab, 45¢; A, White, 40¢;  
B, Drab, 40¢; B, White, 35¢;  
Italian Hemp, 40¢; Linen ..... 57¢4¢  
See also Chain and Ribbon.

### Wire, Picture—

Full Length ..... 90¢ — %  
Short Length ..... 80¢20¢ — %  
Hendryx Standard Wire Picture Cord  
..... 90¢10%  
Turner & Stanton Co. Wire Picture  
Cord ..... 90%

### Cradles—

Grain ..... 50%

### Crayons—

White Round Crayons, Cases, 100  
gro., \$3.00, \$3.50, \$4.00 and \$10.00  
according to grade.

### Zelicker's Lumber:

White and Purple, Indelible ..... \$7.50  
Blue, Red, Green, Yellow and  
Terra Cotta, \$4.50; Black ..... \$4.50  
Giant Lumber, 5 1/2 in. x 15-16 in.  
round, all colors, \$12.00; Indel-  
ible, \$11.00; Blacks ..... \$10.00  
Genuine Soapstone, Metal Workers',  
5 in. x 1/4 in. Round, \$2.50; 5 in. x  
1 in. Square, \$1.75; 5 in. x 3/4 x 3-16,  
\$2.50; 5 in. x 1 1/4 x 3-16 ..... \$3.00  
Suremark, Black, \$2.25; Blue, Red  
and Yellow ..... \$2.50

### Crooks, Shepherds—

American Fork & Hoe Co.:  
Montana ..... 1/2 doz. \$1.30

### Crow Bars—See Bars, Crow.

### Cultivators—

American Fork & Hoe Co.:  
Victor Garden ..... 50¢10%

### Cutlery, Table—

International Silver Company:  
No. 12 M'd'm Knives, 1917, 1/2 doz. \$3.50  
Star, Eagle, Rogers & Hamilton  
and Anchor ..... 1/2 doz. \$3.00  
Wm. Rogers & Son ..... 1/2 doz. \$2.50

### Cutters—

H. H. Mayhew Co. .... 40%  
Red Devil ..... 60%  
B. Mfg. Co. .... 40%  
Woodward ..... 50%

### Meat and Food—

American ..... 30%  
Nos. 401 402 403 404 405 406 407  
Each ..... \$5 \$7 \$10 \$12 \$35 \$50 \$60  
Enterprise:  
No. 10 12 22 32  
Each ..... \$2 \$3 \$2.75 \$1.50 \$4 25¢ @ 74%  
No. 202, \$1.50 ..... 10¢7 1/2%  
P. S. & W. Co.:  
Ideal ..... 50¢10¢5%  
Hales ..... 60¢4%

### Little Giant..... 1/2 doz. 40¢50%

Nos. 305 310 312 322 323  
\$35.00 \$48.00 \$14.00 \$72.00 \$28.00  
New Triumph No. 605, 3/4 doz. \$24.00, 40%

Russwin Food, No. 1, \$24.00; No. 2,  
\$27.00; 3, \$12.00 ..... 45¢10¢10%  
Enterprise Beef Shavers ..... 15¢10  
..... 25¢30%

### Slaw and Kraut—

Henry Duxton & Sons:  
Slaw and Kraut Cutters ..... 35%  
Corn Graters ..... 30%  
J. M. Mast Mfg. Co.:  
Slaw Cutters, 1 Knife ..... 1/2 doz. \$3.00  
Combined Slaw Cutter and Corn  
Grater ..... 1/2 doz. \$4.00

### Tobacco—

All Iron, Cheap, doz., \$4.25 @ 4.50  
Enterprise ..... 25¢30%  
National, 1/2 doz., No. 1, \$21; No. 2,  
\$18 ..... 40%

### Diggers, Post Hole, &c—

Dixton's:  
Rapid, 1/2 doz., \$24.00 ..... 25%  
Samson, 1/2 doz., \$34.00 ..... 25%  
Iwan's Pat. Post Hole and Well  
Auger ..... 40%  
Vaughan Pattern Post Hole Augers,  
Perfection Post Hole Diggers, 1/2  
doz. .... \$3.50  
Split Handle Post Hole Diggers,  
1/2 doz. .... \$7.50  
Hercules Pattern, 1/2 doz. .... \$9.50  
Kohler's, 1/2 doz., Universal, \$14.00;  
Little Giant, \$12.00; Hercules,  
\$10.00; Invincible, \$9.00; Rival,  
\$8.50; Pioneer ..... \$7.50  
Never-Break Crucible Steel Post  
Hole Diggers ..... 60%

### Dividers—See Compasses.

### Drawing Knives—

See Knives, Drawing.

### Dressers Emery Wheel—

Sterling Emery Wheel Dressers ..... 35%  
Sterling Wheel Dresser Cutters ..... 35%

### Drills and Drill Stocks—

Blacksmith's Common Drilling  
Machines ..... \$1.50 @ 1.75  
Breast, Millers Falls ..... 15¢10%  
Breast, P. S. & W. .... 33¢4¢  
C. & C. Ratchet ..... 25%  
Reversible Ratchet Die Stocks ..... 25%  
Goodell Automatic Drills ..... 60¢10%  
Millers Falls Automatic Drills,  
Graves', per doz., No. 1, \$4.80;  
No. 2, \$3.16;  
Millers Falls Automatic Drills, 33¢4¢10%  
Ratchet, Curtis & Curtis ..... 25%  
Ratchet, Parker's ..... 40%  
Ratchet, Weston's ..... 40%  
Ratchet, Weston's ..... 40%  
proved ..... 40¢10¢45%  
Ratchet, No. 612 ..... 40¢10¢45%  
Ratchet, Celebrated ..... 40¢10¢45%  
Ratchet, Whitney's, P. S. & W.,  
40¢10¢50%  
Whitney's Adjustable, No. 10, \$12.00,  
33%4

### Twist Drills—

Bit Stock ..... 70¢ @ 70¢10%  
Taper and Straight Shank ..... 65¢ @ 65¢10%

### Drivers, Screw—

Screw Driver Bits, per doz. 45¢50¢  
Balsey's Screw Holder and Driver, 1/2  
doz., 2 1/2-in., 4-in., 7.50; 6-in.,  
\$9  
Buck Bros. Screw Driver Bits ..... 30%  
Champion ..... 50%  
Dixton's Screw Drivers, Handles  
and Ferrules ..... 70%  
Elmore Tool Mfg. Co.:  
Elmore ..... 60%  
Hartford ..... 66%  
Indestructible ..... 55¢4¢  
Standard Nevertum ..... 66%  
Star ..... 75¢45¢  
Screw Driver Bits ..... 25%  
Fray's Hol. H'dle Sets, No. 3, \$12.50;  
Ford's Brace Screw Drivers ..... 40¢10%  
Gay's Double Action Ratchet ..... 35%  
Goodell's Auto ..... 65¢ @ 65¢10%  
Mayhew's Black Handle ..... 40%  
Mayhew's Monarch ..... 40%  
Millers Falls, 30 doz., No. 11, \$9.25;  
12, \$13.75; 20, \$8.17; 21, \$8.48; 41,  
\$13.43; 42, \$17.21.  
Swan's:  
Nos. 7565 to 7585, 60%; No. 7540,  
40¢10%

### Eave Trough, Galvanized—

Territory. Gal. Steel, Copper.  
Northeastern ..... 75¢10¢45% 50¢10%  
Eastern ..... 80% 50¢10%  
Central ..... 80¢10¢45% 50¢10%  
Northwestern ..... 80¢10¢45% 50¢10%  
Western ..... 80¢45% 50¢45%  
Tennessee ..... 80¢45% 50¢10%  
Southern ..... 75¢10% 50¢45%  
Southwestern ..... 75¢10¢45% 50¢45%

Terms—25 for cash. Factory shipments  
generally delivered.

Note—Lower prices are quite general  
owing to market irregularities.  
See also Conductor Pipe and Elbows.

### Elbows and Shoes—

10-lb. cans, 10 in case... 7¢ 8¢  
10-lb. cans, less than 10... 10¢ 8¢  
Less quantity... 10¢ 8¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

### Extensions, Bit—

Ford's Auger Bit Extensions... 40¢ 50¢

### Extractors, Lemon Juice—

—See Squeezers, Lemon.

### Fasteners, Blind—

Zimmerman's Jap'd and Galv., 50 & 55; Bronze and Plated... 50¢ 55¢  
Walling's... 50¢  
Upon's Patent... 50¢

### Cord and Weight—

Ives, 1/2 in. 100 ft... 10¢  
Titan, 1/2 in. 100 ft... 10¢

### Corrugated—

Acme Corrugated Fasteners... 70¢

### Faucets—

Cork Lined... 50¢ 10¢ 60¢  
Metallic Key, Leather Lined... 60¢ 10¢ 70¢

Red Cedar... 40¢ 5¢ 10¢ 65¢  
Petroleum... 70¢ 10¢ 75¢

B. & L. R. Co.: 60¢ 10¢  
Star... 60¢  
West Lock... 50¢ 10¢

John Sommer's Peerless Tin Key... 50¢  
John Sommer's Boss Tin Key... 50¢  
John Sommer's Victor Mtl. Key... 50¢ 10¢

John Sommer's Duplex Metal Key... 50¢  
John Sommer's Diamond Lock... 50¢  
John Sommer's I. X. L. Cork Lined... 50¢

John Sommer's Reliable Cork Lined... 50¢ 10¢

John Sommer's Chicago Cork Lined... 60¢  
John Sommer's O. K. Cork Lined... 50¢  
John Sommer's No Brand, Cedar... 40¢  
John Sommer's Perfection, Cedar... 40¢

Self Measuring: Enterprise, Self Measuring and Pump, 1/2 doz., \$36.00... 40¢ 10¢  
Lane's, 1/2 doz., \$36.00... 40¢ 10¢  
National Measuring, 1/2 doz., \$36.00... 40¢ 10¢

### Felloe Plates—

See Plates, Felloe.

### Files— Domestic—

List Nov. 1, 1899.

Best Brands... 70¢ 10¢ 75¢ 10¢  
Standard Brands... 75¢ 10¢ 80¢  
Lower Grade... 75¢ 10¢ 80¢ 10¢

Dixson's Superfine... 70¢  
Gold Medal... 70¢  
McCaffrey's American Standard... 60¢ 10¢ 10¢

### Imported—

Stude's Tapers, Stude's List, July 24, '97... 35¢ 10¢ 40¢

### Fixtures, Fire Door—

Richards Mfg. Co.: Universal, No. 103; Special, No. 104... 3.75  
Fusible Links, No. 96... 50¢  
Expansion Bolts, No. 107... 60¢ 10¢

### Grindstone—

Net Prices: 10 in. 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99 101 103 105 107 109 111 113 115 117 119 121 123 125 127 129 131 133 135 137 139 141 143 145 147 149 151 153 155 157 159 161 163 165 167 169 171 173 175 177 179 181 183 185 187 189 191 193 195 197 199 201 203 205 207 209 211 213 215 217 219 221 223 225 227 229 231 233 235 237 239 241 243 245 247 249 251 253 255 257 259 261 263 265 267 269 271 273 275 277 279 281 283 285 287 289 291 293 295 297 299 301 303 305 307 309 311 313 315 317 319 321 323 325 327 329 331 333 335 337 339 341 343 345 347 349 351 353 355 357 359 361 363 365 367 369 371 373 375 377 379 381 383 385 387 389 391 393 395 397 399 401 403 405 407 409 411 413 415 417 419 421 423 425 427 429 431 433 435 437 439 441 443 445 447 449 451 453 455 457 459 461 463 465 467 469 471 473 475 477 479 481 483 485 487 489 491 493 495 497 499 501 503 505 507 509 511 513 515 517 519 521 523 525 527 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2223 2225 2227 2229 2231 2233 2235 2237 2239 2241 2243 2245 2247 2249 2251 2253 2255 2257 2259 2261 2263 2265 2267 2269 2271 2273 2275 2277 2279 2281 2283 2285 2287 2289 2291 2293 2295 2297 2299 2301 2303 2305 2307 2309 2311 2313 2315 2317 2319 2321 2323 2325 2327 2329 2331 2333 2335 2337 2339 2341 2343 2345 2347 2349 2351 2353 2355 2357 2359 2361 2363 2365 2367 2369 2371 2373 2375 2377 2379 2381 2383 2385 2387 2389 2391 2393 2395 2397 2399 2401 2403 2405 2407 2409 2411 2413 2415 2417 2419 2421 2423 2425 2427 2429 2431 2433 2435 2437 2439 2441 2443 2445 2447 2449 2451 2453 2455 2457 2459 2461 2463 2465 2467 2469 2471 2473 2475 2477 2479 2481 2483 2485 2487 2489 2491 2493 2495 2497 2499 2501 2503 2505 2507 2509 2511 2513 2515 2517 2519 2521 2523 2525 2527 2529 2531 2533 2535 2537 2539 2541 2543 2545 2547 2549 2551 2553 2555 2557 2559 2561 2563 2565 2567 2569 2571 2573 2575 2577 2579 2581 2583 2585 2587 2589 2591 2593 2595 2597 2599 2601 2603 2605 2607 2609 2611 2613 2615 2617 2619 2621 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4223 4225 4227 4229 4231 4233 4235 4237 4239 4241 4243 4245 4247 4249 4251 4253 4255 4257 4259 4261 4263 4265 4267 4269 4271 4273 4275 4277 4279 4281 4283 4285 4287 4289 4291 4293 4295 4297 42

**Hoes— Eye —**  
*Scovill and Oval Pattern.*  
*Grub, list Feb. 23, 1899.*  
*D. & H. Scovill.*  
*Am. Fork & Hoe Co. (Scovill Pat-  
 tern).....*  
**Handled—**  
*Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50*  
*Star Double Bit.....*  
*American Fork & Hoe Co.:*  
*Regular, Cotton.....*  
*Crecent, Cultivator.....*  
*Mattok, Senior.....*  
*Mattok, Junior.....*  
*Sprouting.....*  
*Tobacco, Harper's.....*  
*Warren.....*  
*Ivanhoe.....*  
*Cultivator, B B 6.....*  
*Cultivator, B B 6 1/2.....*  
*Weeding, Acme.....*  
*Seuffe, Lightning.....*  
**Hoisting Apparatus—**  
*See Machines, Hoisting.*  
**Holders— Bit—**  
*Angular, 1/2 doz., \$21.00.....*  
**Door—**  
*Bardsley's, Iron, 40%; Brass and*  
*Bronze.....*  
*Empire.....*  
*Pullman.....*  
*Richards Mfg. Co., No. 117, Ever-*  
*ready, 40%; Nos. 118, 119, Sure*  
*Grip.....*  
*Superior.....*  
**File and Tool—**  
*Nicholson File Holders and File*  
*Handles.....*  
**Fruit Jar—**  
*Triumph Fruit Jar Holder, 1/2 gross,*  
*\$18.00; 1/2 doz., \$2.00.....*  
**Trace and Rein—**  
*Fernald Double Trace Holder, 1/2 doz.,*  
*pairs.....*  
*Daah Rein Holder, 1/2 doz.....*  
**Hoes—Razor—**  
*Pike Mfg. Co., Belgian and Swat,*  
*50%; German.....*  
**Hooks—Cast Iron—**  
*Bird Cage, Reading.....*  
*Clothes Line, Reading List.....*  
*Coat and Hat, Reading.....*  
*Coat and Hat, Wrightsville.....*  
*Harness, Reading List.....*  
**Wire—**  
*Belt, Nos. 1 to 15.....*  
*Wire C. & H. Hooks.....*  
*Bradley Metal Clamp Wire, Coat and*  
*Hat, 75¢ to 80¢; Ceiling, 75¢ to 80¢*  
*Columbian Hdw. Co., Gen.....*  
*Parker Wire Goods Co., King, 75¢ to 10¢*  
*Wire Goods Co.:*  
*Acme, 60¢ to 10¢; Chief, 70¢ to 10¢*  
*Crown, 75¢; Czar, 65¢ to 10¢; 53¢;*  
*Brace, 75¢; Czar, 65¢ to 10¢; 53¢;*  
*Ceiling, 75¢.....*  
**Wrought Iron—**  
*Box, 6 in., per doz., \$0.90; 8 in.,*  
*\$1.15.....*  
*Cotton.....*  
**Wrought Staples, Hooks, &c.—**  
*See Wrought Goods.*  
**Miscellaneous—**  
*Hooks, Bench, see Staps, Bench.*  
*Hush, Light, doz., \$6.20; Medium,*  
*\$6.75; Heavy, \$7.65*  
*Grass, best, all sizes, per doz.,*  
*\$2.75 to \$3.00*  
*Grass, common grades, all sizes,*  
*per doz.....*  
*Whiffletree.....*  
**Hooks and Eyes—**  
*Brass.....*  
*Malleable Iron.....*  
*Corvett Mfg. Co. Gate and Scuttle*  
*Hooks.....*  
*Turner & Stanton Co. Cup and*  
*Shoulder.....*  
*Bench Hooks—See Bench Stops.*  
*Corn Hooks—See Knives, Corn.*  
**Horse Nails—**  
*See Nails, Horse.*  
**Horseshoes—**  
*See Shoes, Horses.*  
**Hose, Rubber—**  
*Garden Hose, 3/4 in.:*  
*Competition.....*  
*4-ply Guaranteed.....*  
*4-ply Guaranteed.....*  
*Cotton Garden, 3/4 in., coupled,*  
*Low Grade.....*  
*Fair Quality.....*  
**Irons— Sad—**  
*From 4 to 10.....*  
*B. B. Sad Irons.....*  
*Mrs. Potts', cents per set:*  
*Nos. 50 55 60 65*  
*Jap'd Caps.....*  
*Tin'd Caps.....*  
*New England Pressing, 15¢ to 1¢*  
**Bar and Corner—**  
*Richards Mfg. Co., Bar, 60¢ to 10¢*  
*Corner.....*  
**Pinking—**  
*Pinking Irons.....*  
**Irons, Soldering**  
*See Coppers.*  
**Jacks, Wagons—**  
*Covert Mfg. Co.:*  
*Auto Screw.....*  
*Lockport.....*  
*Lane's Steel.....*  
*Richards' Tiger Steel, No. 130.....*  
*Smith & Hemenway Co.'s.....*  
**Ladder—**  
*Richards Mfg. Co., Ladder Jacks, 50¢*

**Jointers—**  
*Pike Mfg. Co., Saw Jointers, \$7.00.....*  
**Kettles—**  
*Brass, Spun, Plain.....*  
*Enamelled and Cast Iron—See Ware,*  
*Hollow.*  
**Knives—**  
**Butcher, Kitchen, &c.—**  
*Foster Bros' Butcher, &c.....*  
*Wilkinson Shear & Cutlery Co.....*  
**Corn—**  
*Columbian Cutlery Co., Wilcut*  
*Brand Knives and Hooks.....*  
*American Fork & Hoe Co.:*  
*Easy Cut, 1/2 doz., No. 10 C H.....*  
*Easy Cut, 1/2 doz., No. 10 B C H.....*  
*Acme, 1/2 doz.....*  
*Dent, 1/2 doz.....*  
*Adjustable, Serrated, 1/2 doz.....*  
*Serrated, 1/2 doz.....*  
*Yankee, No. 1 C H.....*  
*Yankee, No. 2 C H.....*  
**Drawing—**  
*Standard List.....*  
*C. E. Jennings & Co., Nos. 45, 46,*  
*25¢ to 75¢*  
*Jennings & Griffin, Nos. 41, 42,*  
*66¢ to 75¢*  
*Swan's.....*  
*W. & J. White.....*  
**Hay and Straw—**  
*Serrated Edge, per doz., \$5.00 to \$5.50*  
*Iwan's Sickle Edge.....*  
*Iwan's Serrated.....*  
**Miscellaneous—**  
*Farriers'.....*  
*Wostenholm's.....*  
**Knobs—**  
*Base, 2 1/2 in., Birch or Maple,*  
*Rubber Tip.....*  
*Carriage, Jap., Drive, all sizes,*  
*gro. 35¢ to 40¢*  
*Door, Mineral.....*  
*Door, Por. Jap'd.....*  
*Door, Por. Nickel.....*  
*Hardsley's Wood Door, Shutters, &c. 15¢*  
**Lacing, Leather—**  
*See Belting, Leather*  
**Ladders, Store, &c.—**  
*Lane's Store.....*  
*Myers' Noiseless Store Ladders.....*  
*Richards Mfg. Co.:*  
*Improved Noiseless, No. 112.....*  
*Chimney Shelf, No. 113.....*  
*Trolley, No. 109.....*  
**Ladies, Melting—**  
*L. & G. Mfg. Co., Melting and*  
*Plumbers'.....*  
*P. S. & W.....*  
*Reading.....*  
**Lamps,—**  
*Hammer's M. I. Hand.....*  
**Lanterns—Tubular—**  
*Regular, No. 0.....*  
*Side Lift, No. 9.....*  
*Hinge Globe, No. 0.....*  
*Other Styles.....*  
**Bull's Eye Police—**  
*3 in. ....*  
**Latches— Thumb—**  
*Roggin's Latches, Jap'd, with*  
*Series.....*  
**Door—**  
*Cronk & Carrier Mfg. Co., No. 101,*  
*1/2 doz., \$2.00*  
*Richards' Bull Dog, Heavy, No.*  
*125.....*  
*Richards' Trump, No. 127.....*  
**Leaders, Cattle—**  
*Small.....*  
*Cotton, 45%; Hemp, 45%; Jute,*  
*35%; Sisal, 20%.*  
**Leathers, Pump—**  
*See Pumps—*  
**Lifters, Transom—**  
*R. & E.....*  
**Lines—**  
*Wire Clothes, Nos. 13 19 20*  
*100 feet.....*  
*75 feet.....*  
*Sansom Cordage Works:*  
*Solid Braided Chalk, Nos. 9 to 13.....*  
*Solid Braided Maseons.....*  
*Silver Lake Braided Chalk, No. 9,*  
*\$6.00; No. 1, \$6.50; No. 2, \$7.00; No.*  
*3, \$7.50.....*  
*Masons' Lines, Shade Cord, &c.,*  
*White Cotton, No. 3 1/2, \$1.50; No. 4,*  
*\$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,*  
*\$2.00; No. 4, \$2.25; No. 4 1/2, \$2.75;*  
*Linon, No. 3 1/2, \$2.50; No. 4, \$3.50;*  
*No. 4 1/2, \$4.50.....*  
*Tent and Awning Lines: No. 5,*  
*White Cotton, \$7.50; Drab Cotton,*  
*\$8.50.....*  
*Clothes Lines, White Cotton: 50 ft.,*  
*\$2.75; 70 ft., \$3.25; 10 ft., \$3.75;*  
*100 ft., \$4.00; 20 ft., \$4.25; 30 ft., \$4.75;*  
*100 ft., \$5.25.....*  
*Turner & Stanton Co.:*  
*Solid Braided Chalk, Masons' and*  
*Awning Lines.....*  
*Clothes Lines, White Cotton.....*  
*Shade Cord, Cotton or Linon.....*  
**Locks— Cabinet—**  
*Cabinet Locks.....*  
**Door Locks, Latches, &c.—**  
*NOTE.—Net Prices are very often made*  
*on these goods.*  
*Reading Hardware Co.....*  
*R. & E. Mfg. Co.....*  
**Padlocks—**  
*R. & E. Mfg. Co., Wrought Steel and*  
*Brass.....*

**Sash, &c.—**  
*Ives' Patent:*  
*Crecent.....*  
*Automatic Gravity Metal Sash, 1/2*  
*gro., \$149.58.....*  
*Window Ventilating.....*  
*Pullman Patent Ventilating Lock.....*  
*Reading Sash Lock.....*  
*Taylor Mfg. Co., Perfect Ventilating,*  
*1/2 doz.....*  
**Machines—Boring—**  
*Com. Up'r't, without Augers,*  
*\$2.00 to \$2.25*  
*Com. Ang'l'r, without Augers,*  
*\$2.25 to \$2.50*  
*Ford Auger Bit Co.....*  
*Jennings' Nos. 1 and 4.....*  
*Millers' Falls.....*  
*Snell's, Upright, \$2.65; Angular, \$2.90*  
*Swan's Improved.....*  
**Corking—**  
*Reisinger Invinible Hand Power.....*  
**Fence—**  
*Williams' Fence Machines.....*  
**Hoisting—**  
*Moore's Anti-Friction Chain Hoist, 30%*  
*Moore's Hand Hoist, with Lock*  
*Brake.....*  
*Moore's Cyclone High Speed Chain*  
*Hoist.....*  
**Ice Cutting—**  
*Chandler's.....*  
**Washing**  
*Boas Washing Machine Co.: Per doz.*  
*Boas No. 1.....*  
*Boas Rotary.....*  
*Champion Rotary Banner No. 1, \$57.00*  
*Standard Champion No. 1.....*  
*Standard Perfection.....*  
*Cincinnati Square Western.....*  
*Unedda American, Round.....*  
**Mallets—**  
*Hickory.....*  
*Lignumvitae.....*  
*Tinners' Hickory and Apple-*  
*wood.....*  
**Mangers, Stable—**  
*Sweet Iron Works.....*  
**Mats, Door—**  
*Acme Flexible Steel.....*  
*Elastic Steel (W. G. Co.), new list, 50¢*  
**Mattocks—**  
*See Picks and Mattocks.*  
**Milk Cans—See Cans, Milk.**  
**Mills, Coffee, &c.—**  
*Enterprise Mfg. Co.:*  
*Coffee.....*  
*Shell and Corn.....*  
*National list Jan. 1, 1902.....*  
*Parker's Columbia and Victoria.....*  
*Parker's Box and Side.....*  
*Swift, Lane Bros. Co.....*  
**Motors, Water—**  
*Divine's Red Devil.....*  
*\$2.50 3.50 10.00 15.00.....*  
*No. 1 2 3 4*  
*Lippincott's:*  
*No.....*  
*\$2.50 3.50 10.00 15.00.....*  
*Pike Mfg. Co., Tool and Knife*  
*Grinding.....*  
**Mowers, Lawn—**  
*NOTE.—Net prices are generally quoted*  
*Cheapest, 10 in., \$2.00; advance*  
*10¢ for each size.*  
*Cheap, 10 in., \$2.25; advance 15¢*  
*20¢ for each size.*  
*Better Grade, 10 in., \$3.00; ad-*  
*vance 25¢ for each size.*  
*High Grade.....*  
*Continental.....*  
*Great American.....*  
*Great American Ball B'g, new list, 70¢*  
*Quaker City.....*  
*Pennsylvania.....*  
*Pennsylvania, Jr., Ball Bearing*  
*50¢ to 65¢*  
*Pennsylvania Golf.....*  
*Pennsylvania Horse.....*  
*Pennsylvania Pony.....*  
**Nails—**  
*Wire Nails and Brads, Miscel-*  
*laneous.....*  
*Cut and Wire. See Trade Report.*  
*Hungarian, Finishing, Upholster-*  
*ers', &c. See Tacks.*  
**Horse—**  
*Nos. 6 7 8 9 10*  
*Anchor.....*  
*Coleman.....*  
*New Haven.....*  
*Livingston.....*  
*Western.....*  
*Jobbers' Special Brands,*  
*per lb. 9¢*  
**Picture—**  
*1 1/2 2 2 1/2 3 in.*  
*Brass Hd. gro.....*  
*Por. Head, gro.....*  
**Upholsters—**  
*Brass.....*  
*Plated.....*  
**Nippers—**  
*See Pliers and Nippers.*  
**Nipples—**  
*Standard Kimple Co.:*  
*Wrought Pipe Nipples.....*  
**Nuts— Blank or Tapped.**  
*Cold Punched:*  
*Square.....*  
*Hexagon.....*  
*Square, C. T. & R.....*  
*Hexagon, C. T. & R.....*

**Hot Pressed:**  
*Square.....*  
*Hexagon.....*  
**Off list.**  
*Square.....*  
*Hexagon.....*  
**Oakum—**  
*Best.....*  
*U. S. Navy.....*  
*Navy.....*  
*Plumbers' Spun Oakum.....*  
**Oil—**  
*Pike Mfg. Co., Stenol.....*  
**Oil Tanks—See Tanks, Oil.**  
**Oilers—**  
*Steel, Copper Plated.....*  
*Chase or Paragon.....*  
*Brass and Copper.....*  
*Zinc.....*  
*Railroad.....*  
*American Tube & Stamping Co.:*  
*Spring Bottom Cans.....*  
*Railroad Oilers, &c.....*  
*Hero Fruit Jar Co.:*  
*Spring Bottom Cans.....*  
*Railroad Oilers, etc.....*  
*Malleable, Hammers Improved, Nos.*  
*11, 12 and 13, 10¢; Old Pattern,*  
*Nos. 1, 2, 3, 4, 50¢*  
*Maple City Mfg. Co.:*  
*Spring Bottom Cans.....*  
*Railroad Oilers, &c.....*  
**Openers—Packing Box—**  
*Herculeux, 1/2 doz., \$21.....*  
**Can Openers—**  
*Per doz.*  
*Sprague, Iron Handle.....*  
*Sprague, Wood Handle.....*  
*Sardine Scissors.....*  
*Cut and Bottle Openers, 1/2 doz.,*  
*net: Yankee, \$0.75 to \$0.85; Little*  
*Gem, \$0.50 to \$0.65; Nifty.....*  
**Egg—**  
*Hartigan Nickel Plate, 1/2 doz., \$2.00;*  
*Silver Plate, \$4.00.*  
**Packing—**  
*Asbestos Packing, Wick and*  
*Rope, any quantity.....*  
**Rubber—**  
*(Fair quality goods.)*  
*Sheet, C. I.....*  
*Sheet, C. O. S.....*  
*Sheet, C. B. S.....*  
*Sheet, Pure Gum.....*  
*Sheet, Red.....*  
*Jenkins' '98, 1/2 lb., 50¢.....*  
**Miscellaneous—**  
*American Packing.....*  
*Cotton Packing.....*  
*Isolation Packing.....*  
*Jute.....*  
*Russia Packing.....*  
**Pails, Water, Well, &c.—**  
*See Buckets.*  
**Paint—**  
*Dixon's Silica-Graphite, in 1 gal.*  
*pails and 5 gal. kegs, 25¢; pack-*  
*ages of larger size.....*  
**Pans— Dripping—**  
*Standard List.....*  
*Edwards, Royal Bell.....*  
**Fry—**  
*Common Lipped:*  
*Nos.....*  
*Per doz.....*  
**Refrigerator, Galva.—**  
*Inch.....*  
*Per doz.....*  
**Paper—Building Paper**  
*Asbestos:*  
*Roll Board or Building Felt,*  
*6 to 30 lb., per 100 sq. ft., 2¢ to*  
*Roll Board or Building Felt,*  
*3 to 32 and 1/2 in., 45 to 60 lb.,*  
*per 100 sq. ft.....*  
*Mill Board, Sheet, 40 x 40 in.,*  
*1-32 to 1/2 in.....*  
*Per roll.*  
*Rosin Sized Sheathing: 500 sq. ft.*  
*Light weight, 25 lbs. to roll,*  
*48¢ to 58¢*  
*Medium weight, 30 lbs. to roll,*  
*56¢ to 70¢*  
*Heavy weight, 40 lbs. to roll,*  
*75¢ to 78¢*  
*Black Water Proof Sheathing,*  
*500 sq. ft., 1 ply, 65¢; 2 ply,*  
*85¢; 3 ply, \$1.10; 4 ply, \$1.25.*  
*Deafening Felt, 9, 6 and 1/2 sq.*  
*ft. to lb., ton.....*  
*Red Rope Roofing, 250 sq. ft.*  
*per roll.....*  
**Tarred Paper—**  
*1 ply (roll 400 sq. ft.), ton.*  
*2 ply, roll 108 sq. ft.....*  
*3 ply, roll 108 sq. ft.....*  
*Slater's Felt (roll 580 sq. ft.), 50¢*  
**Sand Paper and Cloth—**  
*Flint and Emery.....*  
*Garnet Paper and Cloth.....*  
**Parers—Apple—**  
*Goodell Co.:*  
*Family Bay State.....*  
*Improved Bay State.....*  
*New Lightning.....*  
*Turn Table '98.....*  
*White Mountain.....*  
*Romanza Improved.....*  
*Dandy.....*  
*Eureka Improved.....*  
*New Century.....*  
*Ranger.....*

Livingston Nail Co.:	
Daisy	doz. \$4.00
Little Star	doz. \$5.00
Rocking Table	doz. \$6.20
Reading Hardware Co.:	
Advance	doz. \$1.00
Baldwin	doz. \$1.00
Reading	doz. \$3.35
Reading	doz. \$6.25

<b>Orange</b>	
Goodell Co., Successor	each \$20.00
<b>Potato</b>	
Saratoga	doz. \$7.00
White Mountain	doz. \$6.00

### Picks and Mattocks—

(List Jan., 1908.)	
List	75¢10%
Cronk's Handled Garden Mattock	
doz.	\$3.00...33½%

### Pinking Irons—

See Irons, Pinking.

### Pins, Escutcheon—

Brass	50¢50¢10%
Iron, list Nov. 11, '85	60¢60¢10%

### Pipe, Cast Iron Soil—

Eastern Prices:

Standard, 2-6 in.	68%
Extra Heavy, 2-6 in.	74%

### Fittings, Standard and Heavy

Heavy	80%
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### Pipe, Merchant—

Carloads to Consumers:

Steel	%
Iron	%
Bk. Galv.	Bk. Galv.

3/4 in.	%
1 in.	%
1 1/2 in.	%
2 in.	%
2 1/2 in.	%
3 in.	%
3 1/2 in.	%
4 in.	%
4 1/2 in.	%
5 in.	%
5 1/2 in.	%
6 in.	%
6 1/2 in.	%
7 in.	%
7 1/2 in.	%
8 in.	%
8 1/2 in.	%
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94 1/2 in.	%
95 in.	%
95 1/2 in.	%
96 in.	%
96 1/2 in.	%
97 in.	%
97 1/2 in.	%
98 in.	%
98 1/2 in.	%
99 in.	%
99 1/2 in.	%
100 in.	%
100 1/2 in.	%

### Pipe, Vitrified Sewer—

Carload lots.

Standard Pipe and Fittings, 3

to 24 in., f.o.b. factory:

First-class	87%
Second-class	80%

### Pipe, Steel—

Per 100 joints.

Edwards' Nests:	
5 in., Standard Blue	\$4.25 \$7.25
6 in., Standard Blue	4.75 7.75
7 in., Standard Blue	5.25 8.75
8 in., Standard Blue	5.75 9.75
9 in., Standard Blue	6.25 10.75
10 in., Standard Blue	6.75 11.75
11 in., Standard Blue	7.25 12.75
12 in., Standard Blue	7.75 13.75
13 in., Standard Blue	8.25 14.75
14 in., Standard Blue	8.75 15.75
15 in., Standard Blue	9.25 16.75
16 in., Standard Blue	9.75 17.75
17 in., Standard Blue	10.25 18.75
18 in., Standard Blue	10.75 19.75
19 in., Standard Blue	11.25 20.75
20 in., Standard Blue	11.75 21.75
21 in., Standard Blue	12.25 22.75
22 in., Standard Blue	12.75 23.75
23 in., Standard Blue	13.25 24.75
24 in., Standard Blue	13.75 25.75
25 in., Standard Blue	14.25 26.75
26 in., Standard Blue	14.75 27.75
27 in., Standard Blue	15.25 28.75
28 in., Standard Blue	15.75 29.75
29 in., Standard Blue	16.25 30.75
30 in., Standard Blue	16.75 31.75
31 in., Standard Blue	17.25 32.75
32 in., Standard Blue	17.75 33.75
33 in., Standard Blue	18.25 34.75
34 in., Standard Blue	18.75 35.75
35 in., Standard Blue	19.25 36.75
36 in., Standard Blue	19.75 37.75
37 in., Standard Blue	20.25 38.75
38 in., Standard Blue	20.75 39.75
39 in., Standard Blue	21.25 40.75
40 in., Standard Blue	21.75 41.75
41 in., Standard Blue	22.25 42.75
42 in., Standard Blue	22.75 43.75
43 in., Standard Blue	23.25 44.75
44 in., Standard Blue	23.75 45.75
45 in., Standard Blue	24.25 46.75
46 in., Standard Blue	24.75 47.75
47 in., Standard Blue	25.25 48.75
48 in., Standard Blue	25.75 49.75
49 in., Standard Blue	26.25 50.75
50 in., Standard Blue	26.75 51.75
51 in., Standard Blue	27.25 52.75
52 in., Standard Blue	27.75 53.75
53 in., Standard Blue	28.25 54.75
54 in., Standard Blue	28.75 55.75
55 in., Standard Blue	29.25 56.75
56 in., Standard Blue	29.75 57.75
57 in., Standard Blue	30.25 58.75
58 in., Standard Blue	30.75 59.75
59 in., Standard Blue	31.25 60.75
60 in., Standard Blue	31.75 61.75
61 in., Standard Blue	32.25 62.75
62 in., Standard Blue	32.75 63.75
63 in., Standard Blue	33.25 64.75
64 in., Standard Blue	33.75 65.75
65 in., Standard Blue	34.25 66.75
66 in., Standard Blue	34.75 67.75
67 in., Standard Blue	35.25 68.75
68 in., Standard Blue	35.75 69.75
69 in., Standard Blue	36.25 70.75
70 in., Standard Blue	36.75 71.75
71 in., Standard Blue	37.25 72.75
72 in., Standard Blue	37.75 73.75
73 in., Standard Blue	38.25 74.75
74 in., Standard Blue	38.75 75.75
75 in., Standard Blue	39.25 76.75
76 in., Standard Blue	39.75 77.75
77 in., Standard Blue	40.25 78.75
78 in., Standard Blue	40.75 79.75
79 in., Standard Blue	41.25 80.75
80 in., Standard Blue	41.75 81.75
81 in., Standard Blue	42.25 82.75
82 in., Standard Blue	42.75 83.75
83 in., Standard Blue	43.25 84.75
84 in., Standard Blue	43.75 85.75
85 in., Standard Blue	44.25 86.75
86 in., Standard Blue	44.75 87.75
87 in., Standard Blue	45.25 88.75
88 in., Standard Blue	45.75 89.75
89 in., Standard Blue	46.25 90.75
90 in., Standard Blue	46.75 91.75
91 in., Standard Blue	47.25 92.75
92 in., Standard Blue	47.75 93.75
93 in., Standard Blue	48.25 94.75
94 in., Standard Blue	48.75 95.75
95 in., Standard Blue	49.25 96.75
96 in., Standard Blue	49.75 97.75
97 in., Standard Blue	50.25 98.75
98 in., Standard Blue	50.75 99.75
99 in., Standard Blue	51.25 100.75
100 in., Standard Blue	51.75 101.75

### Planes and Plane Irons—

#### Wood Planes—

Bench, first qual.	30¢30¢5%
Bench, second qual.	25¢25¢5%
Molding	25¢25¢5%

Chapin-Stephens Co.:

Bench, First Quality	30%
Bench, Second Quality	40%
Molding and Miscellaneous	50%
Toy and German	50%
Union	60%

### Iron Planes—

Chapin's Iron Planes.....60%

Union.....60%

### Plane Irons—

#### Wood Bench Plane Irons, list

Dec. 12, '06	25%
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Buck Bros.....30%

Chapin-Stephens Co.....25%

Union.....25%

L. & J. White.....25%

### Planters, Corn, Hand—

Kohler's Eclipse.....doz. \$7.50

### Plates—

Felco.....lb. 3/4¢1/4¢

Avery Stamping Co.:

Standard Wrot. Steel Felco Plates

in 100 lb. boxes, per 100 lb. 3/4 in.

1 1/4 in., \$4.00 net; 1 1/2 in. to 2 in.,

inclusive, \$3.75 net.

### Steel Pipe Hook—

Never-Break.....75¢10%

### Pliers and Nippers—

Button Pliers.....75¢65¢75¢10¢5%

Gas Burners, per doz., 5 in., \$1.25

@\$1.50; 6 in., \$1.45, \$1.50.

Gas pipe.....7 8 10 12-in.

\$2.00 \$2.25 \$2.75 \$3.50

Acme Nippers.....50¢5%

Cronk & Carter Mfg. Co.:

American Button.....80%

Improved Button.....75¢10%

Cronk's.....80%

No. 3 Linemen's.....50%

Stub's Pattern.....45%

Combination and others.....35%

Elmore Tool Mfg. Co.:

Gas Pliers.....70%

Wire and Cutting Pliers.....75%

Heller's Farriers' Nippers, Pinners

and Tools.....40¢50¢10¢10¢5%

P. S. & W. Timmers' Cutting Nip-

pers.....40%

Swedish Side, End and Diagonal

Cutting Pliers.....50%

Utica Drop Forge & Tool Co.:

Pliers and Nippers, all kinds.....40%

**Plumbs and Levels—**

Chapin-Stephens Co.:

Plumbs and Levels.....30¢30¢10%

Chapin's Imperial Brass Cor.....40¢40¢10%

Pocket Levels.....30¢30¢10%

Extension Sights.....30¢30¢10%

Mechanists' Levels.....40¢40¢10%

Diastion & Sons:

Shifting Levels.....60¢10%

Pocket Levels.....60¢10%

Plumbs and Levels.....60¢10%

Track Level and Gauge.....60¢10%

Woods' Extension.....35%

**Points, Glaziers—**

Bulk and 1-lb. papers.....lb. 3¢

1/4-lb. papers.....lb. 9¢4¢

3/4-lb. papers.....lb. 16¢

### Police Goods—

Manufacturers' Lists...\$5@55¢5%

Tower's.....25%

### Polish—Metal, Etc—

**Sausage Stuffers or Fillers**See *Stuffers or Fillers, Sausage.***Saw Frames—**See *Frames, Saw.***Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws—**

Atkins:	
Circular	45%
Band	50@50&10%
Butcher Saws	50%
Cross Cuts	35%
One-Man Cross Cut	40%
Narrow Cross Cut	50%
Hand, Rip and Panel	35&45%
Miter Box and Compass	40%
Mulay, Mill and Drag	45%
Wood Saws	40&10%
Chapin-Stephens Co.:	
Turning Saws and Frames	30&30&10%
Diamond Saw & Stamping Works:	
Sterling Kitchen Saws	30&10&10%
Diston's:	
Circular, Solid and Ins'ted Tooth	50%
Band, 2 to 18 in. wide	60%
Band, 1/4 to 1 1/2	60%
Crosscuts	45%
Narrow Crosscuts	50%
Mulay, Mill and Drag	40%
Framed Woodsaws	25%
Woodsaw Rods, Tinned	15%
Hand Saws, Nos. 12, 99, 9, 16, d100	25%
D8, 120, 76, 77, 8	25%
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1	30%
0, 60, Combination	30%
Compass, Key Hole, &c.	45%
Hand Ice Saws	45%
Butcher Saws and Blades	30%
C. E. Jennings & Co.'s:	
Back Saws	16%
Butcher Saws	25&7 1/2%
Compass and Key Hole Saws	12 1/2%
Framed Wood Saws	33 1/2&7 1/2%
Hand Saws	12 1/2%
Wood Saw Blades	33 1/2&7 1/2%
Millers Falls:	
Butcher Saws	15&10%
Star Saw Blades	15&10%
Massachusetts Saw Works:	
Victor Kitchen Saws	40&10&50%
Butcher Saws	35&40%
Peace & Richardson's Hand Saws	30%
Simonds:	
Circular Saws	45%
Crescent Ground Cross Cut Saws	30%
One-Man Cross Cuts	40&10%
Gang Mill, Mulay and Drag Saws	45%
Band Saws	50%
Back Saws	25&25&7 1/2%
Butcher Saws	35&35&7 1/2%
Hand Saws	25&25&7 1/2%
Hand Saws, Bay State Brand	45%
Compass, Key Hole, &c.	25&25&7 1/2%
Wood Saws	40&7 1/2%
Wheeler, Madison, Clemson	45%
Co.'s Cross Cut Saws	50%

**Hack Saw Blades and****Frames—**

Atkins' Hack Saw Blades A A A	25%
Diston's:	
Coneave Blades	25%
Chromol Blades	35%
Hack Saw Frames	30%
Simonds, 25%; The Best	35%
Culley	35%
C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180	40&7 1/2%
Hack Saws, Nos. 175, 180, complete	40&7 1/2%
Goodell's Hack Saw Blades	40&7 1/2%
Griffin's Hack Saw Frames	35&5&10%
Griffin's Hack Saw Blades	35&5&10%
Star Hack Saws and Blades	15&10%
Sterling Hack Saw Blades	30&10&5%
Sterling Hack Saw Frames	30&10&10%
Sterling Power Hack Saw Machine, each, No. 1, \$25.00; No. 2, \$30.00	25%
Victor Hack Saw Blades	25%
Victor Hack Saw Frames	40%
Whittaker Mfg. Co.:	
National Hand Blades, Hand Frames, Power Blades	40%

**Scroll—**

Barnes, No. 7, \$15	25%
Barnes' Scroll Saw Blades	40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$15; with boring attachment, \$20	25%
Lozier, complete, \$10.00	15&10%
Rogers, complete, \$3.50 and \$4.00	15&10%

**Scales—**

Union Platform, Plain	\$2.10 @ \$2.20
Union Platform, Stpd.	\$2.30 @ \$2.50
Chatillon's:	
Eureka	25%
Favorite	40%
Grocers' Trip Scales	50%
The Standard Portables	40%
The Standard R. R. and Wag.	40%

**Scrapers—**

Box, 1 Handle	dos. \$1.25 @ \$1.10
Box, 2 Handle	dos. \$2.25 @ \$2.50
Ship, Light, \$2.00; Heavy, \$1.50	
Chapin-Stephens Co., Box, 30&10%	
Richards Mfg. Co., Foot	40%

**Screws—Bench and Hand**

Bench, Iron, doz., 1 in.	\$2.50 @
2 1/2; 1 1/2, \$3.00 @ \$2.25	1 1/2
Bench, Wood	\$3.50 @ \$3.75
Hand, Wood	70&10 @ 70&10&10%
Chapin-Stephens Co., Hand	70&10 @ 70&10&2 1/2%

**Coach, Lag and Hand Rail—**

Lag, Lone Point	80&10%
Coach, Gimlet Point	80&5%
Hand Rail	70&10 @ 75%

**Jack Screws—**

Standard List	70&10 @ 75%
Millers Falls	50&10&10%
Swett Iron Works	70&75%

**Machine—****Cut Tread, Iron, Brass or****Bronze:**

Flat Head or Round Head	50 @ 50&10%
Fillister Head	40 @ 40&10%
Rolled Thread, F. H. or R. H.	75&10%
Iron	65&10%
F. H. or R. H., Brass, Nos. 8 to 14	65&10%

**Set and Cap—**

Set (Iron)	75&10 @ 7 1/2%
Set (Steel), net advance over	25%
Iron	70&10 @ 7 1/2%
Sq. Hd. Cap	70&10 @ 7 1/2%
Hex. Hd. Cap	70&10 @ 7 1/2%
Rd. Hd. Cap	60&7 1/2%
Fillister Hd. Cap	60&7 1/2%

**Wood—**

List July 23, 1903.

Flat Head, Iron	87 1/2 @ 45 @
Round Head, Iron	85 @ 50 @
Flat Head, Brass	80 @ 50 @
Round Head, Brass	77 1/2 @ 50 @
Flat Head, Bronze	75 @ 50 @
Round Head, Bronze	72 1/2 @ 50 @
Drive Screws	87 1/2 @ 50 @

**Scroll Saws—**See *Saws, Scroll.***Scythes—**

Plain Grass, Cutting Edge Polished	\$6.25 @ \$6.50
Clipper, Bronzed Web	\$6.50 @ \$6.75
Solid Steel, Web and Backs Polished	\$7.00 @ \$7.25
Bush Weed and Bramble	\$6.50 @ \$6.75
Grain, Painted, Cutting Edge Polished	\$8.25 @ \$8.50
Clipper Grain, Bronze Web	\$8.50 @ \$8.75

**Seeders, Raisin—**

Enterprise 25 @ 30%

**Sets—Awl and Tool—**

Fray's Tool Handles, No. 1, \$12; \$16; 3, \$12	50%
Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18	20&10%

**Garden Tool Sets—**

American Fork & Hoe Co.	
Rake, Shovel and Hoe, 3 doz. sets, No. 3 P F	\$7.25

**Sets, Nail—**

Octagon	gro. \$3.50 @ \$3.75
Buck Bros.	2 1/2%
Elmore Tool Mfg. Co.	30%
Mayhew's	gro. \$9.00
Snell's Corrugated, Cup Pt.	40&10%
Snell's Knurled, Cup Pt.	40&10%
Victor Knurled, Cup Pt.	gro. \$7.50

**Rivet—**

Regular list 75 @ 75&amp;10%

**Saw—**

Atkins:	
Criterion	40%
Adjustable	40%
Diston's Star, Monarch and Triumph	30%
Giant Royal Cross Cut	doz. \$7.50
Morrill's No. 1	\$15.00
Nos. 3 and 4, Cross Cut	\$20.00
No. 5, Mill	\$30.00
Nos. 10, 11	\$15.00
No. 1 Old Style	\$10.00
Special	\$16.25
Royal, Hand	doz. \$4.99
Seymour Smith & Son's	65%
Taintor Positive	doz. \$6.75

**Shaving—**

Fox Shaving Sets, No. 30	doz. net, \$21.00
Smith & Hemenway Co. s.	75%

**Sharpeners, Knife—**

Pike Mfg. Co.:	
Fast Cut Pocket Knife Hones	doz. \$1.50
Mounted Kitchen Sand Stone	doz. \$1.50
Natural Grit Carving Knife Hones	\$3.00
Quick Cut Emery Carving Knife Hones	doz. \$1.50
Quick Edge Pocket Knife Hones	doz. \$2.50

**Skate—**

Smith &amp; Hemenway Co., Eureka. 50%

**Shaves, Speke—**

Iron	dos. \$1.25
Wood	dos. \$2.00
Chapin-Stephens Co.	30&30&10%
Goodell's	doz. \$9.00
Seymour Smith & Son's	50%

**Shears—**

Best	\$15.00 18.00 20.00 gro.
Good	\$13.00 15.00 17.00 gro.
Cheap	\$5.00 6.00 7.00 gro.

**Straight Trimmers, &c.—**

Best quality Jap.	70&10&5%
Best Quality Nickel	60&10&5%
Tailors' Shears	40 @ 40&10%
Acme Cast Shears	40 @ 40&5%
Columbian Cutlery Co.	30&10&5%
Sheep, 1900 list	50&10&5%
Grass	50&10%
Horse or Mule	50&10%
W. H. Compton Shear Co.:	
Japan Handles, Nickel Blades	60&10&5%
Full Nickel	50&10&5%
Heinrich's Tailor's Shears	10%
National Cutlery Co.'s Nickel Plated	60&10%; Japan Handles
J. Wiss & Sons Co.:	
Best Quality Jap'd	60&10%
Best Quality Nickelled	50&10%
Tailors'	25%

**Timbers' Snips—**

Steel Blades	60&5 @ 10%
Steel Laid Blades	60&10%
Acme Cast Snips	40&15&5%
W. H. Compton Shear Co., Forged Steel Handles	35%

Forged Handles, Steel Blades, Berlin	50%
Heinrich's Snips	40%
Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in.	33&5&7 1/2%
National Cutlery Co.'s Forged Steel	50%
Niagara Snips	40%
P. S. & W. Forged Handles	25%
W. R. W.	50%
J. Wiss & Sons Co.:	
Wiss Forged Steel	25%

**Pruning Shears—**

Columbian Cutlery Co.:	
Hedge, Wilcut Brand	60&10%
Lawn and Border, Wilcut Brand	60&10%
W. H. Compton Shear Co., Dropped Forged Steel	35%
Cronk's Hand Shears	33 1/2%
Cronk's Wood Handle Shears	33 1/2%
Diston's Combined Pruning Hook and Saw, 1/2 doz.	\$18.00
Diston's Pruning Hook only, 1/2 doz.	\$12.00
J. T. Henry Mfg. Co.:	
Pruning Shears, all grades	40%
P. S. & W. Co.	40&10%
Seymour Smith & Son's:	
Hand Shears	70%
Standard Tree Pruners	75&10%
Wood Handle Pruning Shears	40%

**Sheaves—Sliding Door—**

Reading 40%

R. &amp; E. list 15%

**Sliding Shutter—**

Reading list 40%

R. &amp; E. list 15%

**Shells—Shells, Empty—**

Brass Shells, Empty:

Climax, 10 and 12 gauge 60&amp;5%

Club, Rival, 6&amp;5 1/2; First Quality 60&amp;5%

**Paper Shells, Empty:**

New Rapid, 10, 12, 16 and 20 gauge 25&amp;10%

Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge 25&amp;5%

Leader grade 25&amp;5%

Union, League, 10 and 12 gauge 25%

Rival grade 25%

New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge 30%

Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade 20%

**Shells, Loaded—**

Loaded with Black Powder 40%

Loaded with Smokeless Powder, medium grade 40&amp;5%

Loaded with Smokeless Powder, high grade 40&amp;10&amp;10%

Union Metallic Cartridge Co.:

New Club, Black Powders 40%

Nitro Club, Smokeless Powders 40&amp;5%

Arrow, Smokeless Powders 40&amp;10&amp;10%

**Winchester:**

Smokeless Repeater Grade 40&amp;5%

Smokeless Leader Grade 40&amp;10&amp;10%

Black Powder 40%

**Shingles, Metal—Per Sq.**

Edwards Mfg. Co.:

14 x 20 Painted Galv. \$1.25

10 x 14 4.50

10 x 14 4.75

Wheeling Corrugating Co.:

Dixie, 14 x 20 in. 4.45

Dixie, 10 x 14 in. 4.25

Dixie, 7 x 10 in. 5.25

Dixie, 7 x 10 in. 5.25

**Shoes, Horse, Mule, &c.—**

F. O. B. Pittsburgh:

Iron 1000 lbs. per keg \$4.10

Steel 1000 lbs. per keg \$3.85

Burdens, all sizes 1000 lbs. per keg \$3.90

**Snot—**

Drop, up to B. 25-lb. bag. \$1.70

Drop, B and larger 1.95

Buck 1.95

Chilled 1.95

Dust 2.30

**Shovels and Spades—**

Association List 40&amp;7 1/2 @ 40&amp;10%

Avery Stamping Co. 40%

**Snow Shovels—**

Long Handle \$2.50 @ \$2.75

Wood and Mall, D Handle \$2.50 @ \$2.75

Sieves and Sifters—

Hunter's Imitation, gro. \$9.50

Hunter's Genuine, per gro. \$12.00

**Sifters, Ash—**

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, \$3.25

doz. \$30.00

**Sieves, Seamless Metallic—**

(Per dozen)

Mesh 14 1.15 1.15 1.15 1.30

Iron Wire \$1.05 1.05 1.19 1.30

Tinned Wire \$1.15 1.15 1.30 1.30

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 in.

Mesh 18, Nested doz. \$9.90 @ \$9.95

Mesh 20, Nested doz. \$1.00 @ 1.05

Mesh 24, Nested doz. \$1.30 @ 1.40

**Sinks, Cast Iron—**

Painted, Standard list:

12 x 12 to 22 x 36 in. 60%

20 x 24 to 24 x 50 in. 50%

24 x 60 to 24 x 120 in. 30%

Barnes' low list 60%

NOTE—There is not entire uniformity in lists used by jobbers.

**Skels, Wagon—**

Cast Iron 70 @ 70&amp;10%

Steel 35 @ 40%

**Slates, School—**

## Scythe Stones—

Pike Mfg. Co., 1907 list:	
Black Diamond S. S. 8. 8. gro.	\$12.00
Lamotte S. S. 8. 8. gro.	\$11.00
White Mountain S. S. 8. 8. gro.	\$9.50
Green Mountain S. S. 8. 8. gro.	\$7.00
Extra Indian Pond S. S. 8. 8. gro.	\$5.00
No. 1 Indian Pond S. S. 8. 8. gro.	\$7.50
No. 2 Indian Pond S. S. 8. 8. gro.	\$5.00
Leader Red End S. S. 8. 8. gro.	\$5.00
Quick Cut Emery. 8. 8. gro.	\$10.00
Pure Corundum. 8. 8. gro.	\$18.00
Crescent. 8. 8. gro.	\$7.00
Emery Scythe Rifles, 2 Coat. 8. 8. gro.	\$2.80
Emery Scythe Rifles, 3 Coat. 8. 8. gro.	\$11.00
Emery Scythe Rifles, 4 Coat. 8. 8. gro.	\$13.50
Balance of 1907 list. 33 1/2%	
Lectro (Artificial). 8. 8. gro.	\$12.00 33 1/2%
Lightning (Artificial). 8. 8. gro.	\$12.00 33 1/2%
Lightning (Artificial). 8. 8. gro.	\$18.00 33 1/2%

## Stoppers, Bottle—

Victor Bottle Stoppers. 8. 8. gro.	\$9.00
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## Stops—Bench—

Millers Falls. 154 10 1/2%	
Morrill's. 8. doz. No. 1. \$10.00. 30%	
Morrill's. No. 2. \$12.50. 30%	
Seymour Smith & Son's. 00%	

## Door—

Chapin-Stevens Co. 50@50 10 1/2%	
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## Plane—

Chapin-Stevens Co. 20%	
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## Straps—Box—

Acme Embossed, case lots. 20@10 1/2 10 1/2%	
Cary's Universal, case lots. 20@10 1/2 10 1/2%	

## Stretchers, Carpet—

Cast Iron, Steel Points. doz. 55¢	
All Steel Sockets. doz. \$2.00@2.25	
Excelsior Stretcher and Tack Hammer Combined. 8. doz. 60. 20%	

## Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and	
Lard Presses. 25@26 7 1/2%	
National Specialty Co., list Jan. 1, 1902. 36 1/2%	
P., S. & W. Co. 40@10 1/2 10 1/2%	

## Sweepers, Carpet—

Goshen Sweeper Co.: Per doz.	
Gilt Edge. 27.00	
Superfine. 28.00	
Majestic. 24.00	
Select, Nickel. 22.00	
National Sweeper Co. 22.00	
National Queen, Nickeled. 27.00	
Martha Washington, Nickeled. 25.00	
Monarch, Japanned. 20.00	
Perpetual, Japanned. 18.00	
Streator Metal Stamping Co.: 25.00	
Model E, Sanitaire. 15.00	
Eureka. 21.00	
Streator Majestic, Nickeled. 21.00	
Streator Conqueror, Japanned. 22.00	

NOTE.—Lending Manufacturers give the following rebates from list prices: 50c per dozen on three-dozen lots; \$1 per dozen on five-dozen lots; \$2 per dozen on ten dozen lots.

## Tacks, Finishing Nails, &amp;c.

American Carpet Tacks. 90@25 1/2%	
American Cut Tacks. 90@25 1/2%	
Swedes' Cut Tacks. 90@30 1/2%	
Swedes' Upholsterers'. 90@35 1/2%	
Gimp Tacks. 90@35 1/2%	
Lace Tacks. 90@35 1/2%	
Trimmers' Tacks. 90@35 1/2%	
Looking Glass Tacks. 65 1/2%	
Bill Posters' and Railroad Tacks. 90@40 1/2%	
Hungarian Nails. 80 1/2%	
Finishing Nails. 70 1/2%	
Trunk and Clout Nails. 75 1/2%	

NOTE.—The above prices are for Straight Weights.

## Miscellaneous—

Double Pointed Tacks. 90@6 tens@—%	
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## Tanks, Oil and Gasoline—

Wilson & Friend Co.: Oil	
Gal. 30.00	
30 32.75	
60 35.50	
120 38.00	

## Tapes, Measuring—

American Asses' Skin. 50@—%	
Patent Leather. 25@30 1/2%	
Steel. 35 1/2%	
Chesterman's. 35 1/2%	
Keuffel & Esser Co.: 40@10 1/2 10 1/2%	
Favorite, Ass Skin. 25@25 1/2 10 1/2%	
Favorite, Duck and Leather. 25@25 1/2 10 1/2%	
Metallic and Steel, lower list, 35@ 35 1/2%; Pocket, 35@35 1/2%	
Lufkins: 40@10 1/2 10 1/2%	
Asses' Skin. 30@30 1/2 10 1/2%	
Metallic. 30@30 1/2 10 1/2%	
Patent Bond, Leather. 25@25 1/2 10 1/2%	
Pocket. 40@40 1/2 10 1/2%	
Steel. 33 1/2@33 1/2%	
Wienbach & Hilger: 35%	
Chesterman's Metallic, No. 34L. 25%	
etc. 25%	
Chesterman's Steel, No. 103RL. 35%	
etc. 35%	

## Teeth, Harrow—

Steel Harrow Teeth, plain or headed, 3/4-inch and larger per 100 lb. 22.55@22.80	
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## Thermometers—

Tin Case, Cabinet, Flange. Dairy, &c. 30@35 1/2%	
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## Ties, Bale—Steel Wire—

Single Loop. 82 1/2@10 1/2%	
Monitor, Cross Head, &c. 70 1/2%	

## Tinners' Shears, &amp;c.—

See Shears, Tinners', &c.	
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## Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

## Tire Benders, Upsetters, &amp;c.

See Benders and Upsetters, Tire.

## Tools—Coopers—

L. & I. J. White. 20@30 1/2 10 1/2%	
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## Haying—

Myers' Hay Tools. 50%	
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## Ice Tools—

Gifford-Wood Co. 15%	
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## Miniature—

Smith & Hemenway Co.'s. Davidson. 150;	
Gold Plated. 2.00	

## Saw—

Atkins' Cross Cut Saw Tools. 35 1/2%	
Simond's Improved. 33 1/2%	
Simonds' Crescent. 30%	

## Ship—

L. & I. J. White. 25%	
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## Torches—

Hammers, Engine. 8. doz. 4.50	
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## Transom Lifters—

See Lifters, Transom.

## Traps—Fly—

Balloon, Globe or Acme, doz. \$1.15@1.25; gro. \$1.15@1.20	
Harper, Champion or Paragon, doz., \$1.25@1.40; gro. \$1.30@1.50	

## Game—

Imitation Onocida. 75@10 1/2%	
Newhouse. 50 1/2%	
Hawley & Norton. 50 1/2%	
Victor. 75@75 1/2 10 1/2%	
Onocida Community Jump. 70 1/2%	
Stop Thief. 60%	
Tree Trap. 60%	
Hector. 75@75 1/2 10 1/2%	

## Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12¢	
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Mouse, Round or Square Wire, doz. 85@90¢	
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Marty French Rat and Mouse Traps (Genuine). 8. doz. 1.00	
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No. 1, Rat. \$11.50 \$14.50	
No. 2, Rat. \$5.75 \$6.50	
No. 3, Rat. \$4.70 \$5.25	
No. 4, Mouse. \$2.25 \$3.00	

Animal Trap Co.: 30.00	
Out o' Sight, Mouse. 8. doz. 1.20	
Easy Set, Mouse. 8. doz. .85	
Easy Set, Rat. 8. doz. .85	
Out o' Sight Chockers, 8. doz. holes. 12	
Out o' Sight, Tin, 5-hole, 8. doz. traps. 75	

## Trowels—

Diston Brick and Pointing. 25%	
Diston Plastering. 30%	
Diston "Standard Brand" and Garden Trowels. 30%	
Kohler's Steel Garden Trowels, 8. doz. \$1.50; 5 in., \$1.25; 6 in., \$1.50	
Never-Break, Forged Steel Garden Trowels, in bulk, net 8. doz. \$3.50	
In 1 doz. boxes. 8. doz. \$4.00	
Woodrough & McParlin, Plastering. 25%	

## Trucks, Warehouse, &amp;c.—

B. & L. Block Co.: 50@10 1/2 10 1/2%	
New York Pattern. 50@10 1/2 10 1/2%	
Western Pattern. 60@10 1/2 10 1/2%	
Handy Trucks. 8. doz. \$16.00	
Grocery. 8. doz. \$15.00	
McKinney Trucks. each, net \$10.00	
Model Store Trucks. 8. doz. \$18.50	

## Tubs, Wash—

Mfg's list, price per gross. No. 0 1 2 3	
Galvanized. \$67 \$70 \$81 \$103 10 1/2 7 1/2 6 1/2 5 1/2	

## Twine, Miscellaneous—

Flax Twine: 15 1/2%	
No. 9, 1/4 and 1/2 lb. Balls. 21@23 1/2	
No. 12, 1/4 and 1/2 lb. Balls. 19@21 1/2	
No. 18, 1/4 and 1/2 lb. Balls. 16@18 1/2	
No. 24, 1/4 and 1/2 lb. Balls. 13 1/2@15 1/2	
No. 36, 1/4 and 1/2 lb. Balls. 15@17 1/2	
Chalk Line, Cotton 1 1/2 lb. Balls. 24@29 1/2	
Cotton Mops, 6, 9, 12 and 15 lb. to doz. 8 1/2@19 1/2	
Cotton Wrapping, 5 Balls to lb. according to quality. 13 1/2@19 1/2	
American 2-Ply Hemp, 1 1/2 lb. Balls. 18 1/2@19 1/2	
American 3-Ply Hemp, 1 lb. Balls. 18 1/2@19 1/2	
India 2-Ply Hemp, 1 1/2 lb. Balls. 7 1/2@9 1/2	
India 3-Ply Hemp, 1 lb. Balls. 7@8 1/2	
2, 3, 4 and 5-Ply Jute, 1 1/2 lb. Balls. 9@21 1/2	
Mason Line, Linen, 1/2 lb. Balls. 17 1/2	
No. 26 1/2 Mattress, 1/4 and 1/2 lb. Balls, according to quality. 30@60 1/2	
Wool, 3 to 6 ply. B 6¢; A 7 1/2¢	

## Vise—

Solid Box. 60@60 1/2 10 1/2%	
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## Parallel—

Athol Machine Co.: 40%	
Simpson's Adjustable. 40%	
Standard. 30%	
Amateur. 30%	
Columbian. 40 1/2%	
Slide. 35%	
Fisher & Norris Double Screw, net, each, Nos. 2 \$10.50; 3 \$16.00; 4 \$22.50; 5 \$27.00; 6 \$32.00.	

## Fulton Mach. &amp; Vise Co.: F. &amp; R. Double Swivel Ma-

chinitists' 40%	
Star, Solid Jaw, Machinists' 40%	
Holland's: 40@40 1/2 10 1/2%	
Machinists' 40@40 1/2 10 1/2%	
Keystone. 65@50 1/2 10 1/2%	
Lewis Tool Co. 30%	
Adjustable Jaw. 30%	
Monarch, 50%; Solid Jaw. 30%	
Massey Vise Co.: 40%	
Clincher. 40%	
Parallel Bar. 15%	
Perfect, 15%; Lightning Grip. 15%	
Merrill's: 25%	
Millers Falls Oval Slide Pattern. 60@10 1/2 10 1/2%	
Parker's: 20@25%; Regulars. 20@25%	
Victor. 40%	
Vulcan. 40@45%	
Combination Pipe. 55@60%	
Prentiss. 20@25%	
Rock Island. 33 1/2%	
Snediker's X. L. 33 1/2%	
Stephens. 33 1/2%	

## Saw Filers

Disston's D 3 Clamp and Guide, 8. doz., \$24.00; 30%; Clamps. 30%	
Perfection Saw Clamps, 8. doz. \$1.50	
Reading. 60%	

## Wood Workers—

Fulton Mach. & Vise Co.: 40%	
F. & R. Double Swivel Coach- 40%	
Star Solid Jaw Woodworkers. 60%	
Massey Vise Co.: 15%	
Lightning Grip, 15%; Perfect. 15%	
Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.	

## Miscellaneous—

Fulton Machine & Vise Co., Com- 70%	
bination Pipe. 60@60 1/2 10 1/2%	
Holland's Combination Pipe. 60@60 1/2 10 1/2%	
Massey's Quick Action Pipe. 40%	
Parker's Combination Pipe: 60 1/2%	
87 Series, 60%; 157 Series, 60 1/2%; No. 870, 40%.	
Rock Island Pipe. 25%	

## Wads—Price per M.

B. E., 11 up. 60¢	
B. E., 9 and 10. 70¢	
B. E., 8. 80¢	
B. E., 7. 80¢	
P. E., 11 up. \$1.00	
P. E., 9 and 10. 1.25	
P. E., 8. 1.50	
P. E., 7. 1.50	

Ely's B. E., 11 and larger. \$1.70@1.75	
Ely's P. E., 12 to 20. \$3.00@3.25	

## Ware, Hollow—

Cast Iron, Hollow—	
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Store Hollow Ware:	
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Enameled. 45@10 1/2%	
Ground. 50 1/2%	
Plain or Unground. 60%	
Country Hollow Ware, per 100 lbs. \$2.75@3.00	

White Enameled Ware:	
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Marlin Kettles. 65@10 1/2%	
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Covered Ware:	
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Tinned and Turned. 35@10 1/2%	
Enameled. 45@10 1/2%	

See also Pots, Glue.

## Enameled—

Agate Nickel Steel Ware. 33 1/2%	
El-an-gue. 60@10 1/2%	
Iron Clad Ware. 70@10 1/2%	
Lava and Volcanic, Enameled. 40@10 1/2%	

## Tea Kettles—

Galvanized Tea Kettles:	
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Inch. 6 7 8 9	
Each. 45¢ 50¢ 55¢ 60¢	

## Steel Hollow Ware—

Avery Stamping Co.: 65 1/2%	
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Never-Break Spiders and Grid- 65 1/2%	
dles. 65 1/2%	
Steel Kettles, Maalins Scotch. 60%	
Bowls, Tin'd. 60%	
Steel Stew Pans, Stew Pots, etc. 30%	
Porcelainized. 30%	
Cleveland Stamping & Tool Co.: 65 1/2%	
Solid Steel Spiders and Grid- 65 1/2%	
dles. 65 1/2%	
Solid Steel Kettles. 60 1/2%	

## Warmers, Foot—

Pike Mfg. Co., Soapstone. 40@40 1/2 10 1/2%	
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## Washboards—

No. 60—Brass King, Single Surface. 8. doz. \$2.80	
Open Back. 8. doz. \$2.80	
862—White Hen, Spiral Grimp. 33.35	
Glass. 33.35	
964—Royal Hine Enamel, Single Surface, Ventilated Back. 33.35	
172—Our Best, Single Zinc, Soap. 33.35	
Drainer. 33.35	
122—Soap Saver, Single Zinc, Iron Top. 33.35	
100—Northern Queen, Single Zinc. Perforated, Open Back. 33.00	
134—Universal, Single Zinc, Extra. 32.80	
171—North Star, Ventilated Back. 32.80	
760—Banner Globe, Single Zinc, Ventilated Back. 32.25	
55—Peerless, Double Zinc, Spring Protector. 37.70	
56—Red Cross, Double Zinc, Swing Protector. 35.60	
17—North Star, Solid Zinc, Swing Protector. 33.60	
173—Jewel, Single Zinc, Pall Size. 31.25	
St. Louis Washboard Co.: 32.50	
Ben Hur, Brass, Open Back. 32.50	
Brass Key, Open Back. 32.75	

## Washers—Leather, Axle—

P. E., 11 wp.....	\$1.00
P. E. 9 and 10.....	1.05

